40 Rock C

POPULAR Computing WEEKLY

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1-7 November 1984

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Vol 3 No 44

ICL-Sinclair new micro

ICL's One-Per-Desk project — its much rumoured new micro, based on Sinclair's QL technology, is to be launched on November 15

The machine, which uses the QL circuit board at its heart, includes a built-in modem and terminal emulation software, together with a monitor.

One-Per-Desk will also use the QL's microdrives and be supplied complete with the Psion *Xchange* software suite — the up-graded business versions of *Quill, Easel, Archive* and *Abacus* available on the QL — built in on Rom.

The whole package is expected to sell for around £1 200, and will be marketd under the ICL name

●Psion is at present negotiating with Acorn Computer Group to convert its *Xchange* suite of programs for the new Acorn ABC machines

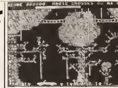
Discs for QL

QUEST Automation has announced the QL Executive Series — an ambitious range of peripherals for the Sinclair QL, including floppy disc drives and a Winchester hard disc drive

The Shugart-based 5¼ inch floppy disc drives begin with a single 200K drive at £249 Single 400K and 800K versions are £359 and £425, with dual 400K and 800K models at the top of the range at £499 and £599 respectively. Interfaces and power supplies are included in the prices.

Quest believes that the addition of disc drives for the QL makes the machine much more attractive for serious business

continued on page 5



Chiller catches cold

MASTERTRONIC has been forced to change the music featured on its C64 game *Chiller*, based on the Michael Jackson video *Thriller*

The software company received a solicitors letter from Rocksoft, a new company set up to protect music publishers rights in the computer software field. Rocksoft had gained licensing rights to the *Thriller* music, and pointed out that Mastertronic's use of the music was unauthorised.

"When we sent the solicitors letter, Mastertronic capitulated immediately, and a substantial out of court settlement was agreed," said Martin Humphrey, Rocksoft's general manager

Martin Alper of Mastertronic commented, "We would have liked to have contested Rocksoft's action, but a lengthy court proceeding would have meant we would have had to withdraw *Chiller* from the market, even if only temporarily. Instead, we have agreed to pay a royalty for all *Chiller* copies sold so far — it is *not* an out of court settlement — and all future productions of the game will have completely different music, composed in-house"

Rocksoft, a subsidiary of Spectrum Group, which also owns Statesoft and Micro Dealer UK, has gained licensing rights to a number of pieces of music including Beatles songs and *Chariots of Fire*

"We have basically set up as a licensing company to stop the flagrant disregard of the Copyright Act,' continued Martin Humphrey, who spent seven years as managing director of Island Records before joining Rocksoft "We hope to build up a kind of copyright consultancy to help software houses gain legitimate rights to music."

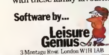
In the immediate future, however, Rocksoft is negotiating

continued on page 5

Ingenious...

Computer games for people who hate computer games.

Give your joystick a rest, and your brain a chance with these family favourites.



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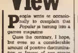
View



People write in occasionally to complain that *Popular* is turning into a games magazine

Quite the contrary, I hope, but even so a considerable amount of positive discrimination in favour of non-games material has be be exercised.

Of the 107 home computer packages released in the last three weeks 87 are games, eight are education programs, four are programming utilities and only eight provide serious applications for home micros

I can't believe that this break-down accurately reflects the uses to which people put their micros More it reflects the fact that the software companies have had a lean year and are playing safe Games *do* sell and it is easier to produce another platforms-and-ladders game than it is to write a decent word-pro package

Moreover, the situation serves to point up a serious problem faced by the micro manufacturers. Any machine priced under £200 automatically becomes a games machine — a situation created entirely by the independent software houses.

Commodore's Plus/4 represents a second attempt to produce a machine which will sell to the serious' user Everything was going fine with its Commodore 64 model until its price came down from £350 to £199 Then suddenly the machine was tagged with a games image.

Why do you suppose that Acorn resolutely holds the price of its BBC at £399 (well, it's part of the reason)? And why do you suppose Sinclair didn't give the QL a cassette interface? Programs now coming out for the QL like Sagesoft's accounting suite and Quest's *Tally* programs are exactly the ones Sinclair wants

) Presents...

) Futures...

Home finance on your BBC > Seven new sound effects for the Commodore 64 > And Star Game is Dragon Slayer on the QL

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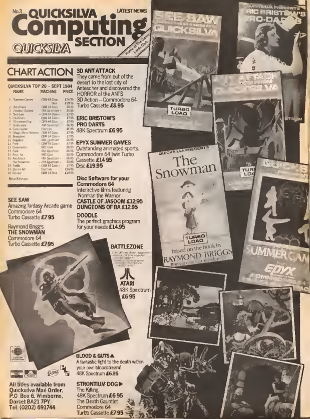
ABC

86 052 copies sold every week (Jan-June 1984 ABC)

How to submit articles Articles which are submitted for publication should not be more than 2000 words long The articles and any accompanying programs should be original It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish although we will always try our best to make sure programs work.

Computer Trade Association Magazine of the Year



No.3 QUICKSILVA LATEST NEWS
Computing SECTION
QUICKSILVA
Home of The Game Lords Club
CHART ACTION
QUICKSILVA TOP 20 – SEPT 1984
NAME MACHINE PRICE
1 Summer Games CBM 64 Cass £14.95
Disk £19.95
2 Ant Attack CBM 64 Cass £8.95
4 See-Saw CBM 64 Cass £7.95
6 Strontium Dog CBM 64 Cass £7.95
7 Battlezone 48K Spectrum £6.95
8 Gatecrasher Electron £6.95
10 Boogaboo CBM 64 Cass £7.95
11 Bugaboo 48K Spectrum £6.95
12 Fred CBM 64 Cass £7.95
13 Gatecrasher BBC Cass £6.95
14 Fred 48K Spectrum £6.95
16 Ant Attack 48K Spectrum £6.95
The Snowman 48K Spectrum £6.95
18 Traffic CBM 64 Cass £7.95
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20 Doodle CBM 64 Disk £14.95
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They came from out of the desert to the lost city of Antescher and discovered the HORROR of the ANTS
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QUICKSILVA PRESENTS
The Snowman
based on the book by RAYMOND BRIGGS
SUMMER GAMES
EPYX

Epyx on the way from CBS software

CBS RECORDS has set up a new UK software division, CBS Software.

CBS Software has signed a licensing agreement with US company Epyx, covering the UK and Europe, and will also be importing the range of programs already produced by CBS in the States.

"Under our agreement with Epyx, we will be launching eight games in November," said Brian Hyams, general manager of CBS Software. "*Silicon Warrior, Jump Man, Pit Stop, Temple of Apshai, Breakdance, Impossible Mission, Lunar Outpost* and *Dragon Riders of Pern* will all be brought out initially for the Commodore 64.

We hope to convert them to the Spectrum in time, and possibly to the BBC and MSX as well. Epyx's *Summer Games* would be included in the list had we not licensed the title to Quicksilva some months back."

***Dinosaur Dig*, one of the educational programs from CBS's US division**

Imports from the CBS label in the US will follow, and will be largely educational programs for the 64 — *Ducks Ahoy, Seahorse, Hide 'n' Seek* and the *Success with Maths* series are all ear-marked to be made available over here.

Prices will be £8.95 on cassette and £11.95 on disc.

Quest

Continued from page 1

purposes. "Quest investigated possible enhancements for the QL, and found great potential for add-ons," said managing director Tony Earl. "Microdrives, for instance, are widely believed to be varying in reliability."

The company has also launched its CP/M-68K operating system for the QL, licensed from Digital Research. It will be available both on floppy disc at £49.50 and microdrive cartridges at £79.50.

Quest also launched four separate memory expansion packages for the QL, fully buffered and based on 64K DRam modules. The 64K Ram board costs £99.00, an extra 128K memory will cost £159.00 with 256K at £299.00. Top of this range is a 512K memory expansion at £499.00. With the memory board expansions, Quest has announced an Expansion Console which will take up to four expansion cards, and provides an add-on power supply.

On the software side, Quest has worked closely with Psion, authors of the software packages bundled with the QL, to produce *Tally I* and *Tally II*, sophisticated accounts packages.

Tally is an integrated system and data can be exchanged between *Tally I* and *II* and also with Psion's *Quill, Archive, Easel* and *Abacus* packages.

Tally I comprises sales ledger, sales invoicing and stock control facilities. *Tally II* provides purchase ledgers and nominal ledgers. *Tally I* will cost £99, and *Tally II* £50.

The two *Tally* programs are also being made available as a single package running under CP/M-68K — the Padmede Accounts Software — at £149.

The entire range of QL peripherals and software should be available from the middle of next month.

DIY robots from Fischer

ARTUR Fischer has brought out a robot building kit as part of its Fischertechnik educational toy system.

The Fischertechnik Computing package contains all the components needed to construct six different robots.

They range from a simple sorting machine to a single robot 'arm' and a tracking mechanism which keeps a solar cell in the correct alignment with the path of the sun.

In addition to the building parts, the kit also contains all the necessary electrical components — motors, potentiometers, microswitches and an electro-magnet.

The Computing kit costs £84.95. Home micro interfaces for the BBC, Spectrum and Commodore 64, to allow the robots to be externally controlled by computer are also available, although not included in the package. Fischer supplies an interface made by Unilab for £50 for all three machines.

Interfaces from Microbotics (around £30) and Economatics (around £60) are also suitable.

Details from Artur Fischer (UK) Ltd, Fischer House, 25 Newtown Road, Marlow, Bucks.

All change at Tansoft

ONLY weeks after two Oric directors, Barry Muncaster and Paul Johnson, bought out Oric software house, Tansoft, three senior Tansoft executives have left the company.

Paul Kaufmann, Cathie Burrell and Geoff Phillips have set up a new software company, based in Bedfordshire, called Orpheus Software.

Tansoft developed from Tangerine, the company that originally designed the Oric 1 computer. Tansoft supported the Oric machines with software but were planning to diversify to provide titles for other micros before the company's takeover by Barry Muncaster and Paul Johnson.

"The split between us and Tansoft is amicable," said Paul Kaufmann. "There is no acrimony involved. Tansoft wanted to do things differently from the way Orpheus now has plans to operate — for example, the conversions to other machines.

"At Orpheus we are currently working hard to get products out for Christmas. At the end of November we will be bringing out three — as yet untitled — arcade games for the Atmos, followed by programs for the Spectrum, Commodore 64, MSX and Amstrad." A Spectrum adventure called *Underworld — the Village* is set for release before Christmas. For the Commodore 64, Orpheus intends to concentrate on utility programs. "The company is also developing a business software division to serve machines such as the Sirius and Apricot range.

"Orpheus has obtained financial backing from two private investors, one in this country and one in France — we plan to develop a high profile in France."

Tansoft is now being headed by Adrian Rushmore, its former marketing manager. "After the reshuffle when Barry Muncaster and Paul Johnson took over the existing directors were placed in an awkward position, since they no longer had the same degree of authority," Adrian said. "They left by mutual consent, but we're all still friends.

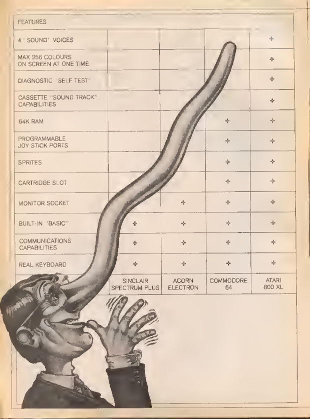
"Tansoft's plans to diversify to other machines have now been put back for about five to six months and now we are concentrating our support on the Atmos."

Chiller

Continued from page 1

with software houses for a game based around the Beatles song *Yellow Submarine*, and looking closely at Konami's *Track and Field*, which is thought to use a version of the theme tune from *Chariots of Fire* as its backing track, and *Jet Set Willy*, which uses *If I Were a Rich Man*.

More news on page 8



FEATURES	SINCLAIR SPECTRUM PLUS	ACORN ELECTRON	COMMODORE 64	ATARI 800 XL
4 'SOUND' VOICES				✦
MAX 256 COLOURS ON SCREEN AT ONE TIME				✦
DIAGNOSTIC 'SELF TEST'				✦
CASSETTE "SOUND TRACK" CAPABILITIES				✦
64K RAM			✦	✦
PROGRAMMABLE JOY STICK PORTS			✦	✦
SPRITES			✦	✦
CARTRIDGE SLOT			✦	✦
MONITOR SOCKET		✦	✦	✦
BUILT-IN 'BASIC'	✦	✦	✦	✦
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Sparks fly at Thorn-EMI

THORN-EMI Computer Software has laid off its entire in-house Creative Sparks programming staff

All future Creative Sparks releases will be commissioned on a freelance basis, while previously 70% of releases were originated in-house. The programmers offices at Wardour Street, London, will be closed down, and Creative Sparks will be run from Thorn-EMI's premises in Farnborough, Hants

"Running an in-house programming team of twenty-plus people was just uneconomic," explained Creative Sparks' Gordon Reid.

"The overheads were massive, and a number of the programmers wanted to work freelance in any case. Most of them will continue to work for us on a licensed basis. All the ex-programmers will continue to receive royalties for the games they worked on while at Thorn-EMI."

Adam drops

US MICRO manufacturer Coleco Industries has announced a substantial price reduction for its Adam home computer

The price has been dropped from $650 (about £540) to $475 (about £400)

The move has fuelled continuing speculation in the US press that Coleco may discontinue the Adam after Christmas. Coleco denies that it has any plans to drop the machine

Sinclair expands

SINCLAIR is expanding its overseas operations

It has established a new, wholly owned subsidiary in Paris — Sinclair Research France and an Italian company — as a joint venture with Sinclair's Italian distributors — GBC Italiana.

Sinclair Research France will be headed by the principal shareholders at Direco, Sinclair's French distributors.

Wellington on the move

GAIL Wellington, Commodore UK's Software development manager, has been appointd as the first member of a new European project team set up by Commodore

The project team will be developing and co-ordinating a new range of hardware and software for the European market, with the emphasis on business systems Commodore's new IBM compatible Commodore PC and Z8000 machines, scheduled for production next year will spearhead Commodore's drive into the business market.

Gail will be heading the new team, based in new Commodore offices in Berkshire.

Longman go for MSX

LONGMAN Software perhaps best known for its educational programs, has announced a range of games for MSX and the Commodore 64 for Christmas.

Arcade games *Hot Shoe* and *Oh Mummy* will be available for the MSX range at £5.95 Four arcade games will be launched for Commodore 64 on cassette at £7.95 — *London Blitz*, *Legionnaire*, *Andromeda Conquest* and *Telengard* — and a fourth, *Rippert* on disc only at £12.95

Longman has also converted three of its educational titles on to MSX — *BMX Number Jump*, *Word Wobbler* and *3D Hypermaths* again at £5.95 each.

All titles should be available next month.

Free ticket offer

250 free tickets

for the 14th ZX Microfair

Popular Computing Weekly is giving away 250 free tickets for the 14th ZX Microfair — to be held at Alexandra Palace on 17-18 November — to the first 250 people who submit programs for the ZX Spectrum or QL for possible publication in the magazine **before November 12.**

All you have to do for your free ticket, valid for either one of the two days of the show, is to enclose a stamped addressed envelope with your program submission.

Remember — the tickets go to the first 250 people to send in a program and the offer applies only to programs received by us **no later than midday on November 12.**

Seeing is believing

See the pack—see the screen—see the game. See the difference the moment you pick up one of the games from Firebird's new Silver Range.

The difference is that our packs show the high quality you'll see on the screen when you play, so you know exactly what you're buying.

The same high standard applies to all twenty games in the range and all are available at the remarkably low price of

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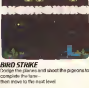
SOFTWARE

Here's a sneak look at three of the NEW games

BOOTY
Feast yer eyes on the BOOTY-ful treasure stored in 20 holds.
There be pirates, parrots and fun galore!!!

THE WILD BUNCH
Can you survive life on the run in this Wild West adventure???



BIRD STRIKE
Dodge the planes and shoot the pigeons to complete the tune–
then move to the next level

Look out for these games in the FIREBIRD silver range at selected high street stores.

SPECTRUM THE WILD BUNCH · BOOTY · MR. FREEZE · TERRA FORCE · VIKING RAIDERS · MENACE · EXODUS · RUN BABY RUN · CRAZY CAVERNS **VIC 20:** SNAKE BITE · MICKEY THE BRICKY
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Clean up your stu

Do you have almost as much paperwork at home as you do at the office?

Is your household budgeting system beginning to assume the complexity of the National Debt? And your filing system now so chaotic that you need another filing system to find anything in it?

Are you a club secretary or member of the PTA drowning beneath a deluge of subscription reminder letters and invitations for sponsored walks?

The answer is the new Commodore Plus/4, the computer specially designed for the office at home

It has the four most commonly used (and useful) software programs actually built into the computer.

Just touch a key and they're all ready to clean up

There's an information storage and retrieval filing system (Database), word processing for letter

FOR FURTHER INFORMATION ON THE COMMODORE PLUS/4 COMPUTER ITS COMPLETE RANGE OF PERIPHERALS PLUS GAMES AND EDUCATIONAL SOFTWARE PLEASE

dy once and for all.

and report writing, a financial analysis program to help you control your budget (Spreadsheet), and a graphics program to translate complex figures into easy-to-understand graphs

Once your study is spick and span, then you can take advantage of the Plus/4's other features

These include the use of advanced BASIC (a more sophisticated, yet simpler form of BASIC), a unique Help key so you can quickly identify programming errors, a large 64K memory (with an astonishing 60K available for use), and a real typewriter keyboard

And all of that is yours for just £299 99 A small price to pay for cleaning up your study

The Plus /4

WRITE TO OR TELEPHONE THE COMMODORE INFORMATION CENTRE 1 HUNTERS ROAD WELDON CORBY NORTHAMPTON NN17 1QX TEL CORBY (0536) 205252

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Letters

Pirate copies

Since reading your article in the August 30 issue concerning pirated software in Portugal I have realised that most — if not all — of the software titles are pirate copies

The problem with software in Portugal is price. If the software companies were legitimate the programs would reach Portugal at astronomic prices. To put things in perspective, for £6 here we can go to the cinema six times or have two substantial dinners at a good restaurant

At those sorts of prices, I doubt if the software companies would sell much software

If the software companies reckon they are losing so much money in my country because of piracy, why don't they join together and compete with the pirates on price

Another reason is that, for anyone making a home tape-to-tape copy, there is no established mechanism whereby the copier can send a donation to the relevant software house. Many of the programs out here are not easily obtainable as a legitimate title

Since your August issue I haven't purchased any more pirated copies or made home copies without sending a letter to the company concerned. The one program I did copy, I sent a letter to the software house concerned, but I am still waiting for reply

Fernando Hugo Dias De Oliveira
P O Box 135
2700 Amadora
Portugal

QL versus BBC

So ..According to Phil Rogers in *Peek & Poke*, October 12 issue, the QL is more powerful than the BBC

The BBC is old-fashioned because it has too many chips? I suppose Phil Rogers will soon be going around telling youngsters that main frame computers are old-fashioned because they have too many chips as well. Sinclair has the idea that everything he can't do in hardware can be got round using software. I don't mind. If he wants to go ahead and produce a 16-bit computer which operates at the speed of a 7-bit then he can go right ahead. It's fine by me

The BBC micro is faster than the QL mainly because it has more chips inside it. The QL, on the other hand, is the slowest 16-bit computer I have ever come across. And the QL is a lot more powerful? Ever heard of expansion — little things like Z80, 6502 and 16-bit second processors and Unicorn? And, what about the QL's windowing facility and multi-tasking? I'd be interested to see one QL program which uses windows and multi-tasking

One day in the future (Sinclair's favourite word), Sinclair Research will produce a computer that will actually be expandable

Jagdeep Sandu
2 Bulls Bridge Road
Southall
Middx

A proper keyboard

What is this I hear? A spokesman for Uncle Clive saying 'Sinclair Research are listening to all the people who say that the Spectrum needs a good keyboard'? Does it really take two years for them to hear?

If your needs dictate that you should have a proper keyboard then there is already a good choice of add-on 'professional' keyboards available for the Spectrum at prices ranging from £30 to £80

As a Spectrum owner I would like to see the Spectrum+ do well — it's a good machine with lots of excellent software. But somehow I fear that Uncle Clive may have opened his ears too late

J Jago
Flat 4
238 Royal College Street
London NW1

"They're playing our tune!"

Forgotten QL owner

Have I been forgotten? I have a QL (I suppose I should be grateful for that) but it is still with the monstrosity stuck in the back.

No recall letter has yet been received from Sinclair and as they were due to have recalled all the 'dongled' QLs by the end of August I am beginning to wonder if they have lost my address.

Is there anyone else in the same boat? I was patient enough waiting for the machine with all its faults — how much longer must I wait for the corrected version?

Richard Chambers
21 Chadwell Springs
Waltham
nr Grimsby
S Humberside

According to Sinclair, all the Rom refit vouchers should have been sent out weeks ago. If for some reason yours has gone astray you should get in touch with Sinclair's Customer Services Department and ask to be sent another voucher straight away

Spectrum versions

I am writing in response to M Payne's letter printed in the August 2 issue, concerning Phil Rogers' article about determining the different versions of Spectrums

By using Print In 16602, 255 is returned if the Spectrum is an Issue 2, as my micro is. If, however, Interface 1 is fitted then 63 is returned. Issue 3 Spectrums return 1891 when Interface 1 is connected. Finally, Issue 2 Spectrums give a figure of 0 if the Protek joystick interface is connected.

C E Baker
Wordsley
Stourbridge
W Midlands

Dark secrets of the QL

Alan Turnbull's article revealing the dark secrets of the QL Rom was written for an AH version QL.

For the JM version — *Print Ver$* gives JM when typed in — then change Alan's program so that, at Line 190 put *Tabulate* 26724 and at Line 230 put *Tabulate* 27400. The resulting print-out for the JM QL is given in the table

B J White
Wirral
Merseyside

COMMAND ROUTINE ADDRESSES

PRINT	29862	RUN	31522	STOP	30824
INPUT	22640	WINDOW	30727	BORDER	30274
INK	28440	STRIP	28444	PAPER	28440
BLOCK	30750	FOR	29482	SCROLL	28404
CSIZE	[illegible]	FLASH	26196	UNDER	26092
OVER	26120	CURSOR	24864	AT	24070
SCALE	28172	POINT	26150	LINE	26200
ELLIPSE	26230	CIRCLE	26203	ARC	26212
POINT_R	26194	TURN	33806	TURNTO	30450
PENUP	30866	PENDOWN	30560	MOVE	30502
LIST	29872	OPEN	25990	CLOSE	28004
FORMAT	26204	COPY	25917	COPY_N	25410
DELETE	25442	DIR	25648	EXEC	25318
EXEC_W	25322	LBYTES	25812	SEXEC	25405
SBYTES	25490	SAVE	25836	MERGE	30367
MRUN	30270	LOAD	30402	LRUN	30400
NEW	30420	CLEAR	30300	OPEN_IN	26002
OPEN_NEW	26106	CLS	30470	CALL	24612
RECOL	25626	RANDOMISE	29402	PAUSE	28065
POKE	28402	POKE_W	30510	POKE_L	28416
BAUD	24804	BEEP	29446	CONTINUE	30494
RETRY	30404	READ	25071	NET	28412
ADATE	25704	RENUM	21734	FLINE	28008
SDATE	25078	ADATE	25056	LINE_R	26213
ELLIPSE_R	26236	CIRCLE_R	26236	ARC_R	26216
AUTO	[illegible]	[illegible]	28608	FILL	28062
WIDTH	30714				

FUNCTION ROUTINE ADDRESSES

ACOS	30950	ACOT	30506	ASIN	30562
ATAN	30960	COS	30974	COT	28080
EXP	30906	LN	31998	LOG10	28081
SIN	31004	SQRT	31010	TAN	31016
DEG	30882	RAD	31020	RND	31193
INT	30200	ABS	31050	PI	31106
PEEK	31224	PEEK_W	31232	PEEK_L	31242
RESPR	31226	EOF	31358	INKEY$	31344
CHR$	31450	CODE	31570	KEYROW	32707
BEEPING	30290	LEN	31589	DIMN	31618
DAY$	31704	DATE	31690	DATE$	31778
FILL$	31440	VER$	31568		

Grub

Munch your way through the biscuits but avoid the crosses in this game for the Vic20 by Paul Jones

In this game for the unexpanded Vic 20, the player controls a mouth, using keys W for up and X for down — or by using a joystick.

The idea is to eat apples, lemons and biscuits that appear on the screen, while avoiding the deadly crosses. Apples score 10 points, lemons one point, while biscuits clear the screen. Eating across causes the loss of one of the players three lives.

This program makes full use of all the Vic's features, including colour, sound and user defined graphics. It also demonstrates sliding screens which provide some interesting effects. Full playing instructions are provided in the program.

Program Notes

Line Numbers	
0-7	Initialisation
10-55	Prints food and crosses
100-310	Main loop
1060-1100	Sees what's being eaten
2000-2300	Sets up UDG's
3000-3030	Lose a life routine
5000-5270	End game routine
9000-9119	Prints instructions
9120-9610	Plays game theme tune

```
0 PRINTCHR$(8)
1 GOSUB2000 GOSUB9000
2 PRINT"J" POKE650,255
3 LI=3 SC=0
5 PO=7702 CO=38422 KO=7702 LO=38422
7 POKE36879 26
10 A=INT(RND(1)*4)+1
12 PRINT"##SCORE="SC"     ██████ LIVES="LI
20 B=INT(RND(1)*505)
30 IFA=1THENPOKEB+KO,0 POKECO+B,2
40 IFA=2THENPOKEB+KO,4 POKECO+B,4
50 IFA=3THENPOKEB+KO,2 POKECO+B,6
51 IFA=4THENPOKEB+KO,2 POKECO+B,6
55 IFA=4ANDRND(1)<.3THENPOKEB+KO,3 POKECO+B,5
100 POKEPO 5 IFPO<>8186THENPO=PO+1 LO=LO+1
105 IFPO=8186THENPO=PO-22 LO=LO-22
110 JO=PEEK(37137) GETQ$
120 IFJO=122ANDPO>7724ORQ$="W"ANDPO>7724
THENPO=PO-22 LO=LO-22
130 IFJO=118ANDPO<8164ORQ$="X"ANDPO<8164
THENPO=PO+22 LO=LO+22
135 GOSUB1060
216 FORDL=6TOKI NEXTDL
217 POKEPO,1 POKELO,0
310 GOTO10
1060 IFPEEK(PO)=0THENSC=SC+10 POKE36877,250
FORDL=1TO20 NEXT POKE36877,0
1070 IFPEEK(PO)=4THENSC=SC+1 POKE36877,240
FORDL=1TO20 NEXT POKE36877,0
1080 IFPEEK(PO)=2THEN3000
1090 IFPEEK(PO)=3THENPOKE36877,0 POKE
36876 200 FORDL=1TO20 NEXT POKE36876,0 PRIN
T"J"
1100 RETURN
2000 I=0
2001 READA IFA=-1THEN2900
2010 POKEI+7168 A I=I+1 GOTO2001
2020 DATA16,8,110,253,253 122,126,60,120,
236,240,192,192,252,120 0,24,24,126,126 ,24,
24
2030 DATA24 24,60 52,44,52,44,52,44 60,0,20,
62,125 125,58 28,0,0,0,0,0,0,0,0,-1
2900 POKE36869 255 PRINT"J" RETURN
3000 LI=LI-1
3005 POKEPO,90+128
3010 POKE36877,220
3020 FORN=15TO0STEP-1 FORDL=1TO50 NEXTDL
 POKE36878 N NEXTN
3025 POKE36877,0 POKE36878,15
3026 IFLI=0THEN5000
3027 PRINT"J"
3028 FORDL=12TO65 POKE36880,DL NEXTDL FORDL
=65TO12STEP-1 POKE36880,DL NEXTDL 3030 GOTO5
5000 FORI=38TO160 POKE36881,I NEXTI
5001 POKE36879,27 POKE36869,240
5010 PRINT"J#***** #GAME  OVER# *****" FORI=
160TO38STEP-1 POKE36881,I NEXTI
5015 POKE198,0
5020 IFSC<OOTHEN5200
5030 PRINT"#YOU HAVE THE HIGHEST  SCORE"
5040 PRINT"#PLEASE ENTER YOUR NAME"'INPUTNA$
5050 OO=SC
5200 PRINT"#YOUR SCORE WAS"SC
5210 PRINT"#HIGHEST SCORE IS"OO
5220 PRINT'#BY 'NA$
5230 PRINT"#ANOTHER GO?"
5240 GETA$ IFA$=""THEN5240
5250 IFA$='Y"THENRESTORE PRINT"J' GOSUB9112
GOTO2
5260 IFA$<>"N"THEN5240
5270 SYS64802
7000 FORI=38TO65 POKE36860,I NEXT
9000  POKE36865,160 PRINT"J#*******
GRUB *******'
9010 PRINT"J#BY PAUL JONES (C) 1983"
9020 PRINT'J#-----------------------"
9030 PRINT'#YOU ARE A HUNRRY #$ ANDYOUR
TASK IS TO'
9040 PRINT'#EAT ALL THE FOOD.'
9050 PRINT"##BUT LOOK OUT,THERE AREDEADLY
CROSSES ABOUT!"
9080 PRINT"##YOU SCORE AS FOLLOWS  ##-10
POINTS" PRINT"##-1  POINT"
9085 PRINT"##-LOSE 1 LIFE"
9086 PRINT"##-GIVES CLEAR PATCH"
9090 PRINT"##USE JOYSTICK OR KEYS '"PRINT"
#W-UP" PRINT"#X-DOWN"
9100 PRINT"##HIT ANY KEY TO START"
9105 FORA=160TO38STEP-1 POKE36881,A NEXTA
9110 GETA$ IFA$=""ANDPEEK(37137)<>94THEN9110
9111 PRINT"J"
9112 FORI=38TO160 POKE36881,I NEXTI
9113 POKE36869,255 PRINT'J#WHAT SPEED WOULD
YOU  LIKE?" PRINT"#9-SLOW TO 1-VERY FAST"
9114 FORI=160TO38STEP-1 POKE36881 I NEXTI
9117 GETL$ IFL$<"1"ORL$>"9"THEN9117
9118 KI=VAL(L$) KI=KI*6
9119 FORI=38TO160 POKE36881,I NEXTI PRINT"J"
 FORI=160TO38STEP-1 POKE36881,I NEXTI
9129 POKE36878,15 PRINT"J" RESTORE GOSUB2000
9139 FORK=9TO255STEP15 POKE36879,K READJO
IFJO=-1THEN9600
9140 POKE36876,JO READL FORI=1TOL NEXTI POKE
36876,0 NEXTK
9160 DATA145,150 145,150 157,100,167,250,
172,150,172,150 172,150,167,500
9170 DATA145,150,145 150,157 150,167,150,167
 150,167,250,157,150,157,150,145,500 ,-1
9600 PRINT"J" FORI=12TO65 POKE36880,I NEXTI
9610 POKE36879,26  FORI=65TO12STEP-1
POKE36880,I NEXTI RETURN
```

WHEN WILL HE STOP USING ME LIKE A TOY AND START USING ME LIKE A COMPUTER ?

Now you and y
bring out the be

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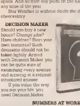

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BRAINPOWER

A sound education

***Graham Taylor** talks to Yamaha's Martin Tennent about the CX5 — the MSX micro with a difference*

Yamaha are shortly to introduce an MSX computer that will play MSX games, do word-processing, and is generally another one of the bevy of similar looking machines due around Christmas

The machine — called the CX5 — has 32K and costs around £500 Don't laugh yet.

Last week Martin Tennant — the man in charge of the Yamaha micro's launch — introduced the CX5 to a group of 20 or so specially selected dealers: "What we are selling is a music synthesiser which just happens to also be an MSX computer — that is the way we are marketing it and that's what you are selling"

In a curious way he seems to characterise the whole approach Yamaha are taking to the launch of the machine He has found out about computers, and their games, only fairly recently His interest is clearly in music not micros and he has the enthusiasm of a student teacher greeting his first receptive class when he explains the machine.

The word that comes to mind when trying to explain the way Yamaha view the launch of the CX5 in the country is *paternal* — quite simply Yamaha wants to educate people through its dealers into buying not another MSX micro — but a *music* computer

There are two problems the CX5 faces. The first is that people really will have to learn something about music to be able to use it to the full. The second is that the machine is so much more sophisticated than anything currently available it inevitably requires considerable explanation.

Yamaha have tagged the CX5 a music computer — and the reason is perhaps best explained by what it can do

Firstly, the CX5 comes complete with an add-on music keyboard and has built into it the approximate equivalent of a DX9 synthesizer — for those not familiar with this instrument it costs around £800 and is capable of creating astonishingly life-like, ie, music instrument-like, sounds

However this synthesizer in the CX5 is completely under computer control so that it can be programmed using cursor and TV screen rather than fiddling with lots of buttons. More important still, using Yamaha's *Composer* program you can write music on to music staves with almost every sort of conventional music notation — latin terms, diminuendo ties accents, staccato etc, and to use eight different impressive voices The musical possibilities of the machine are tremendous, yet the whole thing, complete with a mini-music keyboard, costs under £600

Martin explained, "Last year when we launched the DX7 which got rave reviews everywhere in the music press we were inundated with orders we simply couldn't supply them and it was bad for our image. With the CX5 we are experiencing a similar demand and we need to make sure we don't repeat the mistakes with the DX7"

Yamaha's solution is to limit the supply of the machine to a small number (around 50) of specially selected 'high tech' dealers — music shops that have the facilities to adequately demonstrate and explain what the CX5 can do More than that, representatives from each of the dealers are required to attend a two-day course at Yamaha's base near Milton Keynes.

Over the two days the dealers at one such course which I attended — in groups of about 20 at a time — are shown the machine and have to use it to input programs, design sounds, and write music in several parts — in short, they have to master the chief features of the machine There's even a small exam they have to pass at the end of it

"The exam is really only to check that they've got the basic details right — so far no-one has actually failed — although one person did come very close"

What would happen if someone did fail it, I asked. "Well, they wouldn't get support from Yamaha until they managed to satisfy us they knew what they were doing — we'd probably wait a few months and review the situation."

The Yamaha approach is certainly different from that of the other MSX manufacturers. It must be the only company with an MSX computer to have actually refused to supply Dixon's with the machine on the grounds that its sales staff would not be able to explain it properly "Quite a few high street retailers want to stock the machine but we wouldn't be able to meet its demand at the moment and there will be a lot of customers who buy it without understanding it — the shops won't be able to help and they'll tell them to ring us here — we've had it before and we don't want it to happen again."

The two-day training course was impressive amiable, mildly chaotic but genuinely educational. I, who certainly knew far less about music than the assembled dealers, managed to program a synthesiser and ended up by being able to write quite complicated multi-part music

The whole experience of the course was strange and quite different — maybe it is all part of a devious oriental plot in which Yamaha make us all learn music and so increase the market for their products

Whatever else it made a refreshing change from the usual 'micros as boxes to be shifted off the shelves approach.

You could view it as a kind of arrogance — Yamaha is so convinced that the CX5 is a wonderful machine that it feels merely making the facts clearly known will be enough They could well be right

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The vanguard

Machine HX-10 MSX **Price** £279.95 **Supplier** Toshiba (UK).

The Toshiba HX-10 is the first MSX computer to be widely available in this country, and admirably fulfills its role as the vanguard of the much awaited Japanese invasion.

It is a straightforward implementation of the MSX specification, without any distracting options such as the music synthesiser offered with the Yamaha machine I reviewed many months ago.

Since that time the threat of a wave of MSX machines has undoubtably worried many of the home-grown manufacturers. Many software companies have taken the prospect seriously and have produced, or are in the process of producing, titles for the format.

However, now that the cost of these new computers has been finalised, press and public reaction seems to be muddled — they are not as cheap as expected, and therefore quite easy to dismiss as "poor value for money". If this were the only way to judge a home computer then we might be able to ignore the Toshiba and its kind, but there are more factors in the equation. Buying an MSX machine should ensure that you own a micro which will not be left high and dry in six months time. Already, large sales in Japan mean that software, at least of the games variety, should be available for many years to come. In addition, packaging and marketing can be as important in the consumer market as all the other factors combined.

Curry's, who are reported to be taking 2000 Toshibas a month, must believe that they can sell the machine, but is it a mistake to treat the average computer buyer in the same manner as you would any other customer?

The Toshiba HX-10 is a pretty typical MSX machine. The standards for the MSX Version 1 have been carved in stone. Every machine will have the following components: a Z80A CPU running at a clock speed of 3.5 MHz, 9918A (or compatible) video display chip, AY 3-8910 sound generator, 32K Rom, 16K Ram for the screen plus at least another 16K Ram for system use. Firmware consists of an extensive operating system and Basic interpreter written by Microsoft. The specification also includes items such as the keyboard, which must have certain keys as well as the Qwerty layout, and details of connectors, such as the Rom port. All of the MSX machines are software compatible and can use the full range of MSX approved peripherals.

The quality of construction of the Toshiba is impressive — although the case is plastic it is strong and should be able to withstand a few knocks. It also feels heavy, as the mains transformer is contained inside the box, and not supplied in a separate power supply. The machine is well proportioned, 14.5 by 9.5 inches, and slopes gently from back to front. Quality is reflected in the connectors — no edges of circuit board protrude through the case. Using Rom cartridges is very easy: a slot in the top left-hand corner is covered by a sprung door, and as a Rom is plugged in a microswitch interrupts the power supply. This ensures that nothing nasty will happen if you don't switch off before plugging something in. A neat refinement.

Quite rightly, computer keyboards are considered an important component by public and manufacturers alike — witness the new Spectrum+. Even the Sony Hit Bit MSX model which has a rubber Spectrum-type keyboard in its Japanese version has been given a 'professional' keyboard for the UK.

The HX 10 scores well on this point. Individual switch mechanisms for each key give a good feel and the rake is adequate. The alphanumeric layout does present a few oddities: I cannot get used to the position of the punctuation marks. There are five function keys along the top row, which, in conjunction with the shift key, give ten pre-programmed Basic commands. These can be easily redefined using the *Key* command.

There are also insert, delete, back space, home and stop keys, plus four cursor keys. This last group are slightly distanced from the others. They are essential for editing programs, but the tendency for games software to use them as the alternative to joysticks makes me wish they were larger and wider apart.

Compare the physical aspects of the Toshiba with, say, the Sinclair QL and there is no question about which wins. In the price range I cannot think of a computer of better construction.

Memory capacity of the HX-10 is 64K of Ram, but on power-up only 28,815 bytes are available to Basic (although much of the unused Ram can be claimed by machine-code programs). However, the video ram is independent, so using high-res graphics will not eat into spare memory — you lose 8K on the CBM 64, and the highest graphics mode of the BBC model B leaves less than 4K available. If large memory capacity is important to your application then most of the middle ground 64K computers will be a disappointment. The QL, with over 90K easily accessible to Basic, is the only really "big" machine.

With 32K of firmware stored in Rom, it is not surprising that MSX Basic can be described as extensive. The language supplied by Microsoft has all their trademarks: for example, *Left$*, *Right$* and *Mid$* for string slicing, and variable names signifi-

cant to the first two characters. Mathematical applications will benefit from the accuracy of MSX Basic, which boasts double precision numbers capable of storing a 14-digit value.

Most of the exciting commands available to MSX will be of interest to games writers: sprite handling and collision detection, an interrupt-driven timer and even an *On Strig* command that diverts a program to a sub-routine whenever a joystick fire button is pressed. There are also useful *On Error* statements, base conversion functions for binary, octal and hexadecimal and a macro-language to play music supplied in the form of strings.

Where MSX Basic leaves something to be desired is in its provision of structured programming statements. Perhaps this is an indication of the age of the system, the groundwork for which must have been laid down at least a couple of years ago.

Other non-MSX micro manufacturers have followed the example of Acorn's BBC machine to some extent and, although most don't go as far as SuperBasic on the QL, even Commodore have included a *Do Until Loop* on their new computers.

MSX Basic compares favourably, however, with most other Basics, particularly if you wish to write games in a high level language. It does not have the elegance of BBC of QL Basic or the speed of the BBC or Amstrad. Against the Spectrum, the MSX spec looks good, and to be quite honest, the Commodore 64's Basic would make any extended Microsoft version — as in the MSX — seem attractive.

The actual effort of writing programs on the Toshiba and its brethren is minimised by the full screen editor and programmable function keys, but without any structured commands you may find yourself making much use of the *Tron* statement to debug your programs.

The video display of the Toshiba can be viewed in two ways: there is an RF output to feed a domestic TV, and a composite video socket. But the resolution is such that using a monitor is not really necessary. Two sizes of text screen are available, as well as high res and multi-colour modes. Additionally, sprites can be used with all screen modes except one. Software actually reduces the number of columns in both text modes, to avoid information falling off the edges of domestic TVs and the border only exists at the top and bottom of screen.

Therefore the 40 × 24 character mode normally only gives 37 columns, and as character spaces are only six pixels in width, graphic characters are not always correctly displayed. It is this mode that cannot support sprites, and only two colours from the 16 colour palette are available.

The normal width of the 32 × 24 character mode is 29 columns, still with only two colours, although the border may take on a third shade.

Calling up the high-resolution mode means that you will have to use special tricks to display text. The resolution is 256 × 192 pixels, but the colour resolution is restricted to areas of 1 × 8 pixels, each of which can contain one *Ink* and one *Paper* colour.

The multi colour mode divides the screen differently — 64 by 48 blocks — each of which can assume any colour. The palette's 16 colours include *Clear*, and the usual spectral shades in varying luminances.

The sprite screens are very impressive. You can have 256 × 8 × 8 shapes, and a magnification is possible so that they occupy a 16 pixel block. Also, larger 16 × 16 sprites may be doubled in size to 32 pixels square. In this mode up to 64 shapes can be used. The sprites are arranged in 32 planes — or levels of precedence — allowing shapes to pass under and over each other, and up to 32 sprites may co-exist on each plane. There is a limit, however, of 4 sprites on any one screen row.

If the great asset of these screens are their sprites, then the main drawback must be the difficulty of mixing text with graphics.

One important question to consider when buying a micro is whether you want an 80-column screen — and if you are considering word processing then this is a very desirable feature. Software for MSX — along the same lines as the Spectrum's *Tasword Two* — will be able to achieve an acceptable 64-column display on MSX computers, but the BBC model B, Sinclair QL and Amstrad all offer an 80-column display as standard.

In the area of sound and music, the AY-3 8910 PSG in the MSX specification gives the Toshiba one noise and three tone channels. Instead of the in-built speaker that is often found on home micros, there are two ways of getting sounds from the HX-10. The audio signal is either modulated onto the RF feed so that it can be played through the TV speaker or the phono socket or the Toshiba can supply a hi-fi sound system. Both methods give better quality than most internal speakers. The effects possible are on par with the best of the competition — only the Sinclair micros are notable for not having a dedicated programmable sound generator chip.

Documentation supplied with the Toshiba comes in two parts: an owner's manual and Basic reference book. The division into two parts means that only the owners manual, a fairly slim volume of 52 pages, needs to refer to the HX-10 specifically. It mainly deals with setting up, operating the cassette interface and the use of the control keys.

The Basic reference manual is full of detail but beginners will probably need extra help to learn programming from scratch.

The amount of decent software available for a computer makes a great deal of difference to sales. A substantial number of the top software houses are committed to writing at least something for MSX. Games software for the MSX range is helped by the standard's graphics and sound facilities. Useful application packages will no doubt follow on from the games if demand dictates.

I find it difficult not to think of the HX-10 as a games computer. The Basic supports this concept, as does the lack of an 80-column screen. There is nothing to be ashamed of in wanting a computer to write and play games on, with thoughts of moving on to other applications at a later date.

In this area, the Toshiba is an expensive option. Commodore, Atari and particularly the new Spectrum+ all present lower priced possibilities with good software bases.

If you want to write structured Basic as well as zap aliens then the Acorn Electron costs less even after adding a joystick interface. Where the real conflict will come is between Toshiba, Commodore and Amstrad, side by side in the shop windows.

Amstrad seem to have sufficient software available, and a price advantage, while the ol' 64 is extremely well established. And if cost is not an important factor, then the QL and BBC can play games too . . .

Jeff Naylor

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FRONT Runner
Meet the Challenge

"CADCAM WARRIOR"

"Who?"

"CADCAM WARRIOR, it's got over 8,000 screens!"

"WHAT!!"

DARK STAR

TWO FOUR LETTER WORDS THAT COULD ENCOURAGE THE USE OF OTHERS

Reviews

Diamonds

Program *Spirit of the Stones* **Micro** Commodore 64 **Price** £14.95 **Supplier** Commodore 64

Imitation may be the sincerest form of flattery, but I fear that two major trends in the computer games industry have now been imitated to the extent that they are in danger of driving the customers to some more original and stimulating activity - watching paint dry, for example

The two trends are that of the "platform and ladders" problem, brilliantly used in *Manic Miner* and several of its clones but now just about as hackneyed as *Pacman*, and the new obligatory "prize quest" with virtually every game produced. A superb example of the way these aspects of gamesmanship can be stretched to breaking point comes in the latest offering from Commodore, *Spirit of the Stones*.

This has just been launched with much flourish and publicity in a mightily impressive package With the disc or cassette the lucky buyer gets a hard-cover book called, amazingly enough, *Spirit of the Stones* which chronicles the mystic quest of young Mark, the hero, on the Isle of Wight.

The game is based on the book and the aim is to find the "Great Wight Eye", the main talisman, through playing the game, based on a map of the Isle itself, as well as 40 other talismen any of which can give a claim to part of the royalties for the game.

All in all, it's a great pity the game dismally fails to fulfil any of the hype involved in its packaging It's a fairly simple arcade effort, with excellent sound (*Night on a Bare Mountain* for some obscure reason) and acceptable, although not exceptional, graphics Your character can be manoeuvred around the map avoiding nasties which sap his "psi" level, into various houses These offer varieties of the ladder and platform screens in which you pick up diamonds and other goodies, and avoid spooks, falling crates and the like.

There are clues in the book (which is not, I fear, likely to win many literary prizes) but frankly I couldn't get interested enough in the game to figure them out. Nor, more to the point, could my review assistant, a 10-year old arcade enthusiast whose interest has so far foreshadowed the success of games tried on him with uncanny accuracy Nice package, shame about the contents

Barbara Conway

Unscathed

Program *Return to Eden* **Micro** Commodore 64 **Price** £9.95 (tape) £11.95 (disc) **Supplier** Level 9, 229 Hughenden Road, High Wycombe Bucks

The appearance of a new program from Level 9 is a flag day for all aspiring adventures and, in my household, a signal for the cat to hide under the bed for the duration against the inevitable moment when I go rampaging through the flat, a wild look in my eyes muttering ferociously about bricklaying birds, nudist beaches and the like Since *Return to Eden*, the sequel to *Snowball* is out, the cat may be in hiding until Christmas

You don't need to have played *Snowball* to get into the sequel as ever there is ample documentation with the tape which, in my Commodore 64 version (it is also on the Spectrum, Amstrad and BBC), is turbo-loaded. It starts with you, agent Kim Kimberly, having been framed for sabotaging the colonyship Snowball, in a crashed stratoglider on the planet Eden. For the moment your mission is to survive the misplaced retribution by your own people, but b/e gets very much more complicated than that. Solving these puzzles has nothing to do with luck, you either figure your way out of trouble on Eden or die there

One major difference between this and former Level 9 efforts is that the Spectrum and C64 versions have graphics of a very high quality and can be switched off if required. The scope of the vocabulary appears unscathed by this addition

Even experienced adventurers will probably get fried a few times by the avenging engines of the Snowball, before discovering how to take shelter But, once that hurdle is passed, the real adventure begins, and it's a lulu. From the radioactive desert caused by the engine blast, you progress through a variety of hazards through some highly unlikely locations.

I haven't got to that point yet, and so far superhuman willpower has stopped me using the clue sheet provided, but I can't hold out very much longer since I am having what could be lethal communication problems with some robots. Terrific fun, but should carry a mental health warning

Conway

Gateway

Program *Warp 1* **Price** £6.95 **Micro** BBC B **Supplier** Icon Software, 65 High Street, Bosforth, Tyne & Wear

Maybe it's the television re-runs of Kirk, Spock and co that have brought out another rash of *Star Trek* games. They all ask you to pilot a ship through quadrants of the galaxy, blasting Klingons when you find them. After destroying all the enemies in one part you can move on via a hidden gateway to the next quadrant. Your ship is equipped with protective shields, a fast warp drive for long-distance work and a slow ion drive for local work, including docking onto bases to re-supply the ship and phaser weapons.

The latest version to flash past is *Warp 1* by D Crofts and I Elliott. The authors specify who did what, but both have the nerve to claim credit for "game design"!! What Crofts does deserve recognition for is some stylish graphics and a splended hyperspace display Otherwise it is pretty routine and even lacks some of the sophistication found in other versions such as photon torpedoes.

The only notable feature is that you have to be nimble with the cursor keys to aim accurately at Klingons and to manoeuvre for docking

Jan Watterson

A profit

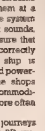
Program *Star Trader* **Price** £6.95 **Micro** Commodore 64 **Supplier** Bug Byte Mulberry House, Canning Place, Liverpool.

Star Trader is one of the very few games to successfully combine arcade action with adventure strategy The scenario involves trading at various commodities such as grain, gold or guns, between a small group of inhabited planets. Unfortunately, interstellar pirates have taken advantage of the valuable trade between the planets, and any trader must run the gauntlet of the fleet of pirate ships which lurk in interplanetary space Your objective is to keep on trading (at a profit, of course)

The strategy side of the game is fairly straightforward, and basically consists of buying goods cheaply on some planets and selling them at a profit elsewhere in the system — not as simple as it sounds. You must also make sure that you keep yourself correctly fed, and that your ship is stocked with lasers and powerpacks Irritatingly the shops where you can buy commodities seem to be shut more often than they are open.

The interplanetary journeys are nicely depicted in 3D graphics, presenting you with a view of passing stars and meteorites through the 'front window' of your craft If you encounter pirates you can either buy your way out of trouble or fight, which is where the arcade action enters the game. Enjoyable and absorbing

Richard Corfield



Fast blast

Program *Ancipital* **Price** £6.95 **Micro** Commodore 64 **Supplier** Llamasoft, 49 Mount Pleasant Tadley, Hants

Jeff Minter's furry animal fetish is allowed full expression in not only *Ancipital* camels, but also goats, guinea pigs and llamas fill the screen. Quite apart from the animals, just about everything except the kitchen sink makes an appearance at some stage — spanners, cassette, fruit, pyramids, cigarette papers, you name it.

The reason for all that paraphenalia floating about is wrapped in the pseudo science fantasy blurb that comes with the game It is far too long and complicated to go into here but the upshot is that you have to make your way round 100 rooms, clearing the 'hostile forces' (presumably the spanners and fruit?) from each one in turn by shooting them as fast as you can. To move from room to room, you have to discover the means of unlocking the walls in each room.

The game is basically a fast blast, as its author likes to call it, but it does involve some strategy in the unlocking of the rooms and the planning of your moves. However, despite (or perhaps because of) the variety of objects whizzing about the graphics are rather dull.

Frankly, it's not one of Jeff Minter's best efforts — somehow I got the impression he derived more fun writing it than I did playing it

Richard Corfield

Economic

Program *Select 1* **Price** £12.49 **Micro** Spectrum 48K **Supplier** Computer Records 21 Napier Place, London W14 8LG

Did Santa Claus ever bring you one of those Compendiums of Games with Draughts, Ludo, Tiddly Winks et al? Well, here's the computer equivalent and it's probably aimed at the same Christmas stocking market. However, instead of cardboard counters you get a dozen offerings from the likes of Anirog and Ocean

A *Hunchback* rubs shoulders with *Kong* *Mr Wimpy* drives a *Moon Buggy* in a *Meteor Storm* while *Space Intruders* play *Pool* instead of manning the *Missile Defence*. There's Trekkie in action through the *Time Gate*, *Transversion* and a reverse version of *Pacman* called *Spectres*. Lost in this arcade anthology is the satirical, political adventure *Denis Through the Drinking Glass*.

A couple of these games are very good and not one is really poor, though several have better alternatives — CDS's *Pool* beats Bug Byte's version here, for example

But for new Spectrum owners, particularly those with joysticks (almost all the games play better with one) it is an excellent, economic introduction to some arcade classics. Otherwise its value will depend on how many of these games you already have

John Minson

Bike jump

Program *Eddie Kidd Jump Challenge* **Price** £5.95 **Micro** Spectrum 48K **Supplier** Martech, Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE

The number of sport simulations in the recent month encourages the view that computer games are merely weedy button pushers But one physical activity that is better left to the programmer's art is jumping over cars on a bike After all, you may not get up and wave so quickly as the rider does here after the dramatic and all too frequent crash landings

The aim is simple judge the bike's speed and the rider's position, which is vital to avoid rolls, and launch yourself off the ramp Successful jumps are scored for style, more cars are added and you try for the record.

It's not easy to master even the shortest jump and every crash dumps you back to the start, where as an Eddie Kidd kid you jump oil cans on a BMX pushbike! As it's hard to fail at this it has no practice value and becomes tedious.

However, it does pad out the game which, though it is well animated and addictive for a while, is unlikely to have lasting interest. Of course there is the inevitable competition tie-in, but that's no compensation for a thinnish game.

John Minson

Justified

Program *Tasword* 464 (also sold as Amsoft's *Amsword*) **Micro** Amstrad 464 **Price** £19.95 **Supplier** Tasman Software, Springfield House, Hyde Terrace, Leeds

This is an incredible advance on the Spectrum's *Tasword Two* and, to be honest, even professional business software companies should start to worry because it comes close to rivalling *Wordstar* in sophistication. You could buy a daisy wheel printer for the difference in price!

As well as standard features like justify, find/replace, block movement, line centreing, tabs etc, there is the ability to define header and footer notes, greatly expanded printer control commands including page numbering, forced form feeds

Default printer control characters are for the Epson FX-80, but can be easily customised. Using programmable keys, the numeric pad can be made to produce preset text such as your name and address up to a total of 120 characters.

For many the most eye catching feature of *Tasword Two* was the 64 column screen, but after some use I began to feel that this was a limitation and would have preferred the option of selecting the number of columns using a scrolling display. Fortunately, despite the Amstrad's 80 column display, *Tasword 464* allows selectable page width of up to 128 characters

Unlike Psion's *Quill*, paragraph justification is not automatic after corrections are made but this can be an advantage as it allows you to tackle two column text.

Documentation is extremely clear, comprehensive and friendly, and there is an optional on-screen help window which can be scrolled to reveal all the commands possible

The program's one, inevitable, limitation is that it is tape-based, but this is made less painful by useful counts of the number of words, lines and characters used as well as the number of characters free There is also the option of fast save and load. The good news is that both *Tasword* and your text files can be transferred to disc with no alteration.

Perhaps we can hope for an upgraded disc version with the Ram windowing on 100 K+ disc files like *Wordstar* and with the addition of mailmerge facilities, but even as it stands there is no better justification for buying a 464 than this program.

Tony Kendle

Lose Points

Program *Ziggurat* **Price** £2.99 **Micro** Spectrum 48K **Supplier** Software Supersavers, Bear Band Complex Allerton Rd, Woolton, Liverpool

A *PCW* feature now a game? Not quite, because unlike the column of the same name, *Ziggurat* is exceedingly bland

Not that it's actually bad There's imaginative use of sound suitably rude for silly inputs, and coloured borders for effect

But where's the character? What's the logic behind this dungeon? Minimal insert notes don't help You wander through a succession of named, but otherwise anonymous chambers, without knowing who you are or why you're there, until it becomes depressingly obvious that you are in a packed five by five grid

I like the way you lose points for resorting to *Help* which can only be used a limited number of times — but applying the same rule to program saving seems very harsh. The vocabulary isn't vast and is irritatingly particular

John Minson

For sale

Program *Country Cottages* **Micro** Amstrad CPC 464 **Price** £00.00 **Supplier** Sterling Software, Garfield House, 86/88 Edgware Road, London W2 2YW

In *Country Cottages* you play the part of a property wheeler-dealer striving to get rich quicker than your opponent Starting with a £100,000 overdraft facility, you have a chance to advertise, alter the rent of or sell a cottage in each town. You can view cottages for sale first to find out their condition, before a very good illustration of the cottage is drawn If you decide to buy, the cottage is auctioned in real time with both players bidding against each other

When you advertise a cottage you have to decide on the rent that you want for it. Be careful though, if you are greedy then nobody will turn up Increasing the rent too much will upset your present tenants who will leave if you don't cut the rent to a reasonable value

The game has some very nice touches such as tenants wishing you a Happy Christmas, pipes bursting in the frost, thunderstorms causing fires, burglars, and furniture smashing children — all of which cost you money. But after a lot of play it will become a little monotonous to play due to the restricted number of options that are available

Greg Pearson

Compulsive

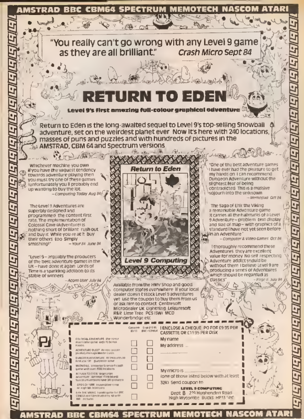
Program *Trollie Wallie* **Price** £7.95 **Micro** Commodore 64 **Supplier** Interceptor Micros, Linden House, The Green, Tadley, Hants

Trollie Wallie is the latest interceptor game to feature Wallie — an orange blob on legs — one of their stock characters. Here he is trying to do his shopping in the supermarket, and a bizarre one at that. Forty shopping items are arranged around the shop which is laid out like a maze with ladders conveyor belts moving walls, and some weird looking other shoppers The object is to collect all the items from the shop, but Wallie must make a journey to the checkout after picking up every five items

It's enjoyable, although very much a standard maze game. The supermarket theme applies only to the objects which you have to collect, such as cabbages, cakes, light bulbs

Graphics and music effects are very well done, once you get the hang of things, it becomes quite compulsive

Richard Corfield



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Second option

Hardware *68K/OS operating system* **Micro QL Price** £144.95 (68K/OS board, £99.95, bundled software, £39.95, manuals, £4.95) **Supplier** GST Computing Systems, 91 High Street, Longstanton, Cambridge

The 68K/OS operating system for the QL is the operating system for the machine that was written by Cambridge-based GST for Sinclair and developed in parallel with Sinclair's own QDOS written by Tony Tebby.

In fact the GST QL operating system was the one demonstrated at the launch of the QL in January — Sinclair's own QDOS had then still to be completed (as became rather obvious when the QL became first delayed, and then began appearing with an Eprom appendage in the Rom cartridge port). Following Sinclair's decision to adopt QDOS in preference to GST's 68K/OS, GST has continued to develop 68K/OS and will soon begin selling it as an add-on for the QL.

The board connects to the left-hand expansion port of the QL, once the blanking plate has been removed. When this is done only a switch can be seen and this allows you to choose between QDOS or 68K OS when the computer is turned on or reset. On start-up 68K/OS gives you five screen options asking you about the number of characters per line you want — the choices are 85, 60, 60, 42 and 40 characters per line. After making your choice the command program is booted from Rom. This gives you information on programs running and stores the microdrive maps for use by other programs. As well as this you can access the operating system itself, allowing you to re-allocate the screen and suspend/kill programs which you no longer need.

The 68K/OS board has space for up to four 16K Eproms, only two of which are used by the operating system and the command program.

Also with the board are supplied two microdrive cartridges which hold accompanying software including a machine-code assembler and a file editor for the system.

Why then is 68K/OS better than QDOS — and what makes it worth having both?

First, unlike QDOS it multi-tasks all programs loaded into the system with any programs already held. Unfortunately, at the moment, there is no commercial software available under 68K/OS, so you have to write your own. Without a high-level language, you will also need to know 68000 machine-code.

Again, unlike QDOS, any text overwritten by a different screen window will be saved allowing you to scroll it back on to the screen at a later date. This is seen when you are using a program as well as the command program. When a program is loaded the command program's screen space is cut to one line, and the new program takes up the rest of the screen.

The system to control microdrive files is far better on 68K/OS than QDOS as you can access a file by giving the name of the tape and file name — in QDOS you must use a fixed drive. Also 68K/OS does not allow you to replace a tape with another tape while a file is still open.

The editor supplied with the operating system will edit any text file or may be used as a simple word processor which is faster and easier to use than *Quill*. The assembler is capable of assembling a text file produced by any other program.

Both these programs can be held in Ram at the same time and so may be used together, though a text file has to be placed on to a microdrive before the assembler can use it. Under 68K/OS the operation of the QL's two microdrives has also been greatly improved — both in speed and reliability. The microdrive system formats the tape with 1K blocks instead of the 0.5K blocks used by QDOS. This means that only half the number of blocks need to be found when loading a file. To improve reliability, a maximum of 100K is stored on each tape.

Other programs supplied with 68K/OS — apart from the editor and assembler — are a draw program, a terminal emulator, and programs to format and copy microdrives and print to an Epson FX-80 printer.

More titles which are planned to be launched later this year are Fortran, Pascal and a more sophisticated assembler package.

Programs to be launched next year will include Basic and a C compiler. These programs may be supplied on Eproms — to plug into the unused sockets on the board — and so will use little of the Ram. To go with these GST plans to sell a range of programs similar to the Psion titles which will work under 68K/OS. GST also plans a disc drive which will run under both 68K/OS and QDOS.

Four manuals cover the areas of the assembler, user manual, application software and programmer's information. The information held in these manuals is well set out though it is not designed for the first time user. Then, in all honesty the OS system is itself highly complex and also not really intended for the first time computer user.

The Programmer's Manual gives information on all the system calls and makes up most of the documentation while the user manual is much smaller and unfortunately gives little information to help the user.

On the whole, Sinclair may have made the right decision in going for QDOS rather than 68K/OS, but only because of the latter system's inaccessibility to a new computer user. Otherwise the 68K/OS offers superior performance.

Instead, the idea of up-grading to it when you want more power and control is far better. A QL and 68K/OS is very good value for anyone who wants a system which can display the idea of multi-tasking and run a language like Fortran all for under £600.

Sadly though, the majority of QL owners are unlikely to consider the added benefits of the 68K/OS worth the £145 price tag.

Roger Thomas

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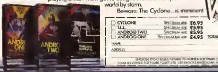

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White on black

Explore your artistic talents to the limit (well almost) on any Spectrum using Doodle, by ***M Shillito***

Doodle is a drawing program for either the 16K or 48K Spectrum, using under 2K of memory. It allows you to draw in any direction in any colour, or use a 'blackboard' effect (that is, white ink on black paper). There is also a facility for filling in enclosed shapes.

To use the program, first you must enter the appropriate mode. Press *D* for Draw Mode.. In this mode cursor keys (5 to 8) are used to draw straight lines. *I* allows you to choose the *Ink* colour, while *E* will let you erase the inevitable odd mistake. *A* is Angle Mode which draws lines at 45 degrees up or down to the left (5 and 6) and up and down to the right (7 and 8 respectively). *M* moves the cursor without drawing. *B* brings in the 'blackboard' effect. *W* returning to the original black on white screen.

Finally, if the cursor is moved into an enclosed shape and *F* is entered, it will automatically be filled with the current *Ink* colour.

Program Notes

Line 3	Sets cursor to centre of screen
Line 5	Sets *Paper* to white
Line 7	Sets *Paper* to black
Lines 12-19	Draw by *Inkeys* changing x,y co-ords
Lines 30-48	Change *Ink*
Lines 50-60	Move cursor over by one
Lines 70-75	Deal with angle lines
Lines 90-112	Work out x,y co-ords of bottom left of shape to fill
Lines 120-144	Fills in objects using Point and Plot

```
  3 LET x=128: LET y=87
  5 PAPER 7: BORDER 7: INK 0: CLS : GO TO 12
  7 PAPER 0: BORDER 0: INK 7: CLS : GO TO 12
 12 OVER 0: PLOT x,y
 14 PAUSE 0
 16 IF INKEY$="5" AND x>0 THEN LET x=x-1: PLOT x,y: GO TO 14
 17 IF INKEY$="6" AND y>0 THEN LET y=y-1: PLOT x,y
 18 IF INKEY$="7" AND y<175 THEN LET y=y+1: PLOT x,y
 19 IF INKEY$="8" AND x<255 THEN LET x=x+1: PLOT x,y
 20 IF INKEY$="f" THEN GO TO 90
 22 IF INKEY$="a" THEN GO TO 70
 23 IF INKEY$="b" THEN GO TO 7
 24 IF INKEY$="i" THEN GO TO 30
 25 IF INKEY$="w" THEN GO TO 5
 26 IF INKEY$="m" THEN GO TO 50
 27 IF INKEY$="e" THEN INVERSE 1
 28 IF INKEY$="d" THEN INVERSE 0
 29 GO TO 12
 30 INPUT AT 1,0; "INK ";a$
 32 IF a$="1" THEN INK 1: GO TO 14
 34 IF a$="2" THEN INK 2: GO TO 14
 36 IF a$="3" THEN INK 3: GO TO 14
 38 IF a$="4" THEN INK 4: GO TO 14
 40 IF a$="5" THEN INK 5: GO TO 14
 42 IF a$="6" THEN INK 6: GO TO 14
 44 IF a$="7" THEN INK 7: GO TO 14
 46 IF a$="0" THEN INK 0: GO TO 14
 48 GO TO 30
 50 OVER 1: PLOT x,y
 52 PAUSE 0
 54 IF INKEY$="5" AND x>0 THEN LET x=x-1: PLOT x,y: PAUSE 3: GO TO 
 56 IF INKEY$="6" AND y>0 THEN LET y=y-1: PLOT x,y: PAUSE 3: GO TO 5
 58 IF INKEY$="7" AND y<175 THEN LET y=y+1: PLOT x,y: PAUSE 3: GO TO 
 60 IF INKEY$="8" AND x<255 THEN LET x=x+1: PLOT x,y: PAUSE 3: GO TO 50
 62 IF INKEY$="d" THEN GO TO 12
 64 IF INKEY$="i" THEN GO TO 30
 65 IF INKEY$="f" THEN GO TO 90
 66 GO TO 52
 70 PAUSE 0
 72 IF INKEY$="5" AND x>0 AND y<175 THEN LET x=x-1: LET y=y+1: PLOT x,y
 73 IF INKEY$="6" AND x>0 AND y>0 THEN LET x=x-1: LET y=y-1: PLOT x,y
 74 IF INKEY$="7" AND x<255 AND y<175 THEN LET x=x+1: LET y=y+1: PLOT x,y
 75 IF INKEY$="8" AND x<255 AND y>0 THEN LET x=x+1: LET y=y-1: PLOT x,y
 76 IF INKEY$="b" THEN GO TO 7
 77 IF INKEY$="i" THEN GO TO 30
 78 IF INKEY$="w" THEN GO TO 5
 79 IF INKEY$="m" THEN GO TO 50
 80 IF INKEY$="e" THEN INVERSE 1
 81 IF INKEY$="d" THEN INVERSE 0: GO TO 12
 82 IF INKEY$="f" THEN GO TO 90
 83 GO TO 70
 89 REM Remove plot point
 90 OVER 0: INVERSE 1: PLOT x,y
 92 INVERSE 0
 93 REM Move y co ords
 95 IF POINT (x,y-1)=0 THEN LET y=y-1
```

continued over the page

```
 97 IF POINT (x,y-1)=1 THEN  GO TO 110
 98 GO TO 95
 99 REM Move x co ords
 10 IF POINT (x-1,y)=0 THEN  LET x=x-1
112 IF POINT (x-1,y)=1 THEN  GO TO 120
114 GO TO 110
119 REM Fill
120 PLOT x,y
122 IF POINT (x+1,y)=0 THEN  LET x=x+1: GO TO 120
124 IF POINT (x+1,y)=1 THEN  GO TO 130
130 IF POINT (x,y+1)=0 THEN  LET y=y+1: GO TO 140
131 LET x=x-1: IF POINT (x,y+1)=0 THEN  LET y=y+1: GO TO 135
135 IF POINT (x,y)=0 AND POINT (x-1,y)=1 AND POINT (x+1,y)=1 THEN  GO TO 12
136 IF POINT (x,y)=1 AND POINT (x,y+1)=1 THEN  GO TO 12
140 IF POINT (x-1,y)=0 THEN  LET x=x-1
144 IF POINT (x-1,y)=1 THEN  GO TO 120
146 GO TO 140
```

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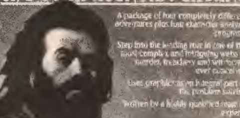

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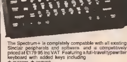

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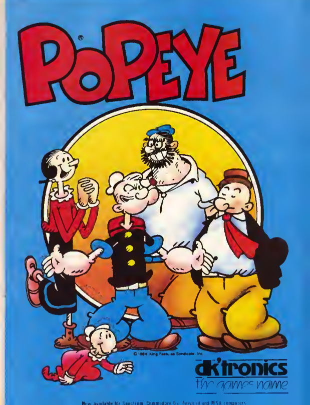
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Listings made easy

*One for disc owners . . . **Rod Pidgeon** takes the strain out of complex listings for the 64 or 8032*

Programmers who use Commodores tend to get into a way of working which optimises Commodore Basic, but can make programs difficult to understand. All too often I have needed to amend a program written a few months ago, and found the listing not easy to read.

The main difficulties are caused by the use of multi statement lines and the omission of spaces, both of which are used to save on the space taken up by the program. They are useful, too, when an *if-then-else* construction is wanted. The *if* and *then* statement are put on one line, and the next line becomes the else statement.

The problem was to make listings of programs easier to understand, and nearer to the structured form in which I plan my programs. What I wanted was a program to print listings which have one statement per line, spaces on each side of keywords, clearer instructions for cursor control and colour symbols than the present reversed characters, and which indents loops and conditional statements.

This program meets the required criteria with a few exceptions. It does not recognise multiple *next* statements — can *next:next* rather than *next j, i*. It needs a *then* in a conditional statement — *if x = 3 then 500* is preferred to *if x = 3 goto 500*. It is confused by multiple exits from loops, and prefers only one *next* for each *for*. Due to Commodore's system of keywords it sometimes adds spaces in peculiar places — *get#* becomes *get #*, for example. However, it has made some programs which I wrote long ago and forgotten all about, quite easy to understand.

Both this program and the program to be structured must be loaded on disc and a suitable printer connected. First, *Run* the program below.

This program starts by setting up two strings of spaces, for future use. Then comes a menu. As I use the program both on a Commodore64/1541/1525 and on a CBM8032/8250/8023, this gives machine options, together with the facility to print either in lower case or in capitals, and if so, allowing any capital letters to print out either as graphics or as letters. Finally you are asked for the file name of the 'target' program, plus any reference (ie, date) you may care to give the printout.

The program file is opened as a sequential file, and which is read, byte by byte, using *get#*. A line of program is held in memory as two bytes which give the position in memory of the start of the next line, then two bytes which give the line number,

```
100 REM **** STRUCTURED LISTING 25/09/84 ****
110 SP$=" [illegible]
120 PRINT"[illegible] S THIS TO RUN ON":PRINT"[illegible]
-OMMODORE 64"
130 PRINT"[illegible] OR":PRINT"[illegible] 8032"
140 INPUT"[illegible] NPUT YOUR OPTION [illegible]";CB$
150 IFCB$<"1"ANDCB$>"2"THEN140
160 CB=VAL(CB$)-[illegible]
170 PRINT"[illegible] PRINT IN CAPS/GRAPHICS MODE [illegible]
[illegible]:POKE1[illegible]-40*CB,0
180 GETA$:IFA$<>"N"ANDA$<>"Y"THEN180
190 PRINTA$:CC=1:IFA$="N"THENCC=0:GOTO230
200 PRINT"[illegible] CONVERT GRAPHICS TO LETTERS (Y/N)?
":POKE1[illegible]-40*CB,0
210 GETA$:IFA$<>"N"ANDA$<>"Y"THEN210
220 PRINTA$:G=0:[illegible]GOTO[illegible]
230 IFCBTHENOPEN4,4,7:GOTO260
240 IFNOTCBTHENOPEN4,4,[illegible]:CLOSE[illegible]
250 OPEN4,4
260 DIMA$([illegible]):FOR[illegible]:FORI=0TO[illegible]:READA$(I):NEXT
:FOR[illegible]:READE$([illegible]):NEXT
270 IFCCTHENFORT=1TO[illegible]:READB$([illegible]):NEXT
280 INPUT"[illegible] FILE NAME [illegible]";FI$:IFFI$="*
"THEN[illegible]
290 INPUT"[illegible] PRINTOUT REF [illegible]";RF$
300 [illegible]PROGRAM, "[illegible] PRINTOUT REF: [illegible]
310 IF[illegible]THEN[illegible]PROGRAM[illegible] PRINTOUT REF: [illegible]
320 PRINT#4,SP$;FI$:IFRF$<>"*"THENPRINT#4,CHR$(13);
SP$;RF$
330 PRINT#4:FO=0
340 OPEN15,8,15:OPEN2,8,2,FI$+",P":GOSUB700:GET#2,
A$,A$
350 FORI=0TO1STEP0:FL=0:LE=0[illegible]
[illegible]
360 IF[illegible]THENFI=0
370 FO$=LEFT$(Z2$,FO*2)[illegible]GET#2,A$[illegible]
380 N=ASC(A$+CHR$(0))+ASC(B$+CHR$(0))*256:P$=RIGHT$
(" "+STR$(N),[illegible]):LE=6
390 P$=P$+FO$:LE=LE+LEN(FO$)
400 FORJ=0TO1STEP0
410 GET#2,A$:P=ASC(A$+CHR$(0)):IFP=0THENPRINT#4,P$
[illegible]
420 IFP=34THENFL=FL+1:IFFL[illegible]THENFL=0
430 IFP=[illegible]ANDFL=0THENGOSUB650:GOTO560
440 IFP[illegible]THEN[illegible]GOTO560
450 IFFL=1ANDCC=2ANDP>159THENK$=CHR$(P-128):GOSUB610
:GOTO560
460 IFFL=1AND[illegible]THEN[illegible]=CHR$([illegible]
470 IFFL=0ANDP[illegible]THENSQ$=SQ$+"[illegible]":FO=FO+1
480 IFFL=0ANDP=[illegible]THENSQ$=SQ$+"[illegible]
490 IFFL=1OR(FL=0ANDP[illegible])THEN[illegible]
500 FOR[illegible]TO3[illegible]
[illegible]
510 NEXT:L=LEN(P$)
520 IFFL=0THEN[illegible]:GOTO560
530 IFNOTCBTHEN[illegible]=P-16[illegible]
*9:GOTO550
540 [illegible]
[illegible]
550 [illegible]:GOSUB610
560 NEXT
570 NEXT:GOTO720
600 IFFL=0ANDRIGHT$(P$,1)<>" "THENP$=P$+" ":LE=LE+1
610 L=LEN([illegible]):IFLE+L>[illegible]THENGOSUB650
620 P$=P$+[illegible]:LE=LE+L:IFP=16[illegible]THENSQ$=SQ$+"[illegible]
630 IFP=1[illegible]THEN[illegible]LEFT$(Z2$,[illegible]):FO=FO-1
640 RETURN
650 PRINT#4,P$:P$=SQ$:LE=LEN(P$):RETURN
700 INPUT#15,[illegible]:IF[illegible]THENRETURN
710 PRINT"*** [illegible] ***";EM$
720 CLOSE2:CLOSE15:PRINT#4:CLOSE4:END
800 DATAEND,FOR,NEXT,DATA,INPUT#,INPUT,DIM,READ,LET
,GOTO,RUN,IF,RESTORE,GOSUB
810 DATARETURN,REM,STOP,ON,WAIT,LOAD,SAVE,VERIFY,DEF
,POKE,PRINT#,PRINT,CONT
820 DATALIST,CLR,CMD,SYS,OPEN,CLOSE,GET,NEW,TAB([illegible]
FN,SPC(,THEN,NOT,STEP,+
830 DATA[illegible]
[illegible]
840 DATATAN,ATN,PEEK,LEN,STR$,VAL,ASC,CHR$,LEFT$
RIGHT$,MID$,GO,CONCAT
850 DATADOPEN,DCLOSE,RECORD,HEADER,COLLECT,BACKUP
COPY,APPEND,[illegible]
860 DATACATALOG,RENAME,SCRATCH,DIRECTORY
870 DATA[CD],[REV],[CH],[CR],[CU],[[illegible]],[CLS],[CL]
880 DATA[WHITE],[CD],[REV],[RED],[CR],[GREEN],[BLUE]
[ORANGE C=1],[F1],[F2]
890 DATA[F5],[F3],[F2],[F4],[FC],[[illegible]],[BLACK],[[illegible]
[illegible]]
900 DATA[LT RED C=3],[GREY1 C=4],[GREY2 C=5],[LT
GREEN C=6],[LT BLUE C=7]
910 DATA[GREY3 C=8],[PURPLE],[[illegible]YELLOW],[CYAN]
```

followed by the PETSCII codes of the characters or keyword which make up the program line The last line of the program finishes with three zeros

Program Notes

Line 140 The use of three spaces, an asterisk and three back spaces is a useful way of making an input statement almost idiot-proof. If only *return* is pressed or any response other than 1 or 2, then Line 150 takes the program back to 140

Line 160 This sets the value of cb at 1 (CBM 64) or 0 (8032). This allows the use later in the program of the statements *if cb then* and *if not cb then*. It is instructive to write a line such as *x=0:if x then print "y"* or *x=0: if not x then print "n"* and try different values of *n*, both positive and negative. This is a helpful introduction to Boolean logic which can save space, as Lines 530 and 540 demonstrate.

Line 220 The second statement could have taken two lines — *if a$="y" then cg=cg +1* followed by Line 225 *go to 250*

Line 230 The statement *if cb* acts as *if cb = −1* This line opens the Vic printer in lower case mode

Line 240 puts the 8023 printer into lower case mode

Line 250 *b$* needs to be dimensioned for eight strings for the 8032, but for 31 strings for the CBM64

Line 270 If for the CBM64, that line over-reads the eight items read in previously, and then adds the extra 39

Line 330 This variable *fo* is used as a counter for for statements.

Line 340 This opens the file, checks to see that it is correctly accessed (*gosub 700*) and gets the first two bytes, which are not used by the program

Line 360 This starts with a zero-step loop. Usually for next loops have a step size but if the step is zero, the loop keeps repeating until an instruction inside the loop makes *i* greater than zero. The purpose of a zero-step loop is to avoid backward jumps, which are time-consuming. When a loop is started the memory position is put on the stack, and when a *next* is encountered, the loop is accessed immediately. In a backward jump the program must be read from the beginning until the line number is found. Also in this line two variables are set; *fl* holds the number of quotes and *le* is the line length. Two bytes are read which are the pointer to the memory position of the next line. If the second is a null string the end of the file has been reached, *l* is set to *1*, the program leaves the loop and goes to the closing line.

Line 360 Ensures that should more *nexts* than *fors* be found, Line 370 will not crash.

Line 370 Calculates the inset (*fo$*) of three spaces for each loop. Variable *sq$* adds six spaces, the length allowed for a line number and its following space. This line also gets the next two bytes which Line 380 converts into the line number, which is set at the start of the string *ps*.

Line 390 Adds the loop inset string and sets *le* (the length of p$) to its revised value.

Line 400 This is the start of a new loop, which deals with the rest of the program line.

Line 410 This gets the next byte. If it is a null string (*chr$(0)*) then the end of the program line has been found, the *p$* is printed, the flag for quotes is set to zero, *j* is set to *1*, and at Line 360 the program passes from the *j* string to the *i* string. The next 14 lines handle the character found in Line 410. If it is *chr$(34)* — quotes — the flag is adjusted. If it is *chr$(58)* — colon — outside of quotes, the string is printed by Line 660. If it is a character from *chr$(32)* to *chr$(127)* it is added to the string. If quotes are set and the character is *chr$(160)* or above, the character is added to the string except when the convert flag is set; when a character 160 down the character table is added. If the character is *chr$(129)* — for — then *fo* is increased, and three inset spaces are added to the string. If the character is *chr$(167)* — then — three inset spaces are added.

Line 490 Ensures that only *chr$(130)* — next — is dealt with by the next two lines, which remove three spaces from the inset string, but ensure that the keyword is printed at least six spaces from the left.

Line 520 Sets *x$* as the keyword, and follows it with a space

Lines 530 to 550 These deal with what is left, the graphics characters for cursor control, reverse on and off, etc, and the colours on the CBM64 the replacement for which are held in the *b$* array. Lines 530 or 540 calculate the position in the array of the replacement for the chr$ value of the character, and take the place of a large number of *if p=5 then x=1* type statements. The equation can be followed if it is remembered that if p=16 then (p>16) returns the value of zero, while if p=17 (or more) then (p−16) returns the value of −1

Line 550 Puts the replacement into *x$*. Subroutines for adding characters to *p$* start at Line 590 which ensures that a space appears before a keyword.

Line 610 Checks what the length of the line would be if the character was added, and if it would be more than 80 the line is printed on Line 660, and a new line is started.

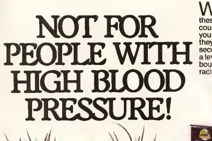
Line 550 Adds the keyword to p$ and calculates the length of *p$*.

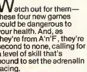
Line 530 Reduces the indent if *chr$(130)* — next — if found, and adjusts the value of *fo*

Line 660 Prints out the string *p$*, resets *p$* to its new length, and resets *le*.

Lines 700 to 720 These are a routine for trapping disc errors. The data statements hold key words and the replacements for the graphics characters.

```
100 REM  ++++ STRUCTURED LISTING
25/09 84 ++++
110 SP$ = "      "
    ZZ$ = SP$
    FOR I = 1 TO 4
       ZZ$ = ZZ$ + ZZ$
    NEXT
120 PRINT "[CLS][CD][CD]     IS THIS TO
RUN ON"
    PRINT "[CD]     [REV]1[P OFF]
COMMODORE 64"
130 PRINT "[CD]        OR '
    PRINT "[CD][REV]2[P OFF] CBM 8032?"
140 INPUT "[CD]      INPUT YOUR OPTION
 1/2)    *[CL][CL][CL]":CB$
150 IF CB$ < > "1" AND CB$ < > "2"
       THEN 140
160 CB = VAL (CB$) - 2
170 PRINT "[CD][CD]     PRINT IN CAP-
/GRAPHICS MODE (Y/N)? ";
    POKE 152 - 40 + C9,0
180 GET A$
    IF A$ < > "N" AND A$ < > "Y"
       THEN 180
190 PRINT A$
    CG = 1
    IF A$ = "N"
       THEN CG = 0
            GOTO 200
200 PRINT "[CD][CD]     CONVERTGRAPHICS
TO LETTERS (Y/N)? ";
    POKE 158 - 40 + CB,0
210 GET A$
    IF A$ < > "N" AND A$ < > "Y"
       THEN 210
220 PRINT A$
    CG = CG + (1 AND A$ = "Y")
    GOTO 250
230 IF CB
       THEN OPEN 4,4,7
            GOTO 260
240 IF NOT CB
       THEN OPEN 7,4,7
            PRINT# 7
            CLOSE 7
```





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The program is designed to help chemistry students improve their knowledge of simple calculations involving the conversion of grams into moles and moles into grams. Most students have difficulty at first with this type of calculation and only with repeated practice do they become proficient.

Using this program saves them the tedium of tackling masses of written problems and also gives instant marking of their answers. Full instructions for use are within the program.

Program Notes

Procmenu Gives the titles of the six sections and enables the required one to be selected.

Procsetup Sets up the screen with the information required in sections two, three, five and six, and checks the answers given and prints whether correct or wrong.

Proccheck Indicates the number of questions correctly answered.

Procwkmg Prints the worked example of moles to grams with short pauses between each stage of the calculation.

Procmg Asks ten questions on converting moles to grams by reading *Data* on number of moles and formula of substance. The correct answer is also read from *Data* and compared with the inputed answer in *Proc setup*.

Prochmg Similar to *Procmg* except that the number of moles is chosen at random and is in the range 0.1 to 1.5. Line 720 is needed because the computer does not always give credit for a correct answer even though the inputed answer appears identical to the calculated one.

Procgmwk Prints the worked example of grams to moles in a similar fashion to *Procwkmg*.

Procgm Similar to *Procmg* except that the conversion is grams to moles.

Prochgm Ten questions on converting grams to moles but the number of grams is chosen as a random number between 1 and 100. Lines 1550 and 1580 are needed to round off the answers to two decimal places.

```
10 CLS
20 *KEY 10 OLD:M RUN:M
30 *FX229,1
40 VDU 23,1,0;0;0;0;
50 PRINT TAB(10,8);CHR$(141);CHR$(134);"C H E M I
C A L"
60 PRINT TAB(10,9);CHR$(141);CHR$(134);"C H E M I
C A L"
70 PRINT TAB(6,12);CHR$(141);CHR$(134);"C A L C U L
A T I O N S"
80 PRINT TAB(6,13);CHR$(141);CHR$(134);"C A L C U L
A T I O N S
 90 PRINT TAB(13,16);CHR$(133); "By R.Price
100 PRINT TAB(10,23);CHR$(136);CHR$(131);"PRESS
SPACE BAR
110 REPEAT UNTIL GET=32
120 CLS
130 DEFPROCmenu
140 CLS
150 PRINT TAB(5,2);CHR$(131);"Select the category
you want'
160 PRINT TAB(4,3);CHR$(131),"from the list below
by pressing"
170 PRINT TAB(8,4);CHR$(131);"the appropriate number."
180 PRINT TAB(1,7);CHR$(134);"1.Worked example of
moles to grams.
190 PRINT TAB(1,10);CHR$(134);"2 Simple questions on
moles to grams-
200 PRINT TAB(1,13);CHR$(134);"3.Harder questions on
moles to grams."
210 PRINT TAB(1,16);CHR$(133);"4.Worked example of
grams to moles."
220 PRINT TAB(1,19);CHR$(133); 5.Simple questions on
grams to moles.
230 PRINT TAB(1,22);CHR$(133);"6.Harder questions on
grams to moles-
240 M=GET
250 IF M=49 THEN PROCwkmg
260 IF M=50 THEN PROCmg
270 IF M=51 THEN PROChmg
280 IF M=52 THEN PROCgmwk
290 IF M=53 THEN PROCgm
300 IF M=54 THEN PROChgm ELSE PROCmenu
310 ENDPROC
320 DEFPROCsetup
330 PRINT TAB(0,18);CHR$(131);CHR$(157);CHR$(129);"
RELATIVE ATOMIC MASSES"
340 PRINTCHR$(131);CHR$(157)
350 PRINTCHR$(131);CHR$(157);CHR$(129);"O=16   N=1
C=12   Mg=24   Na=23
360 PRINTCHR$(131);CHR$(157);CHR$(129);"S=32   K=39
N=14   Ca=40   Cl=35.5"
370 PRINT TAB(3,7), "Enter your answer then
press RETURN"
380 PRINT:PRINT
390 INPUT "   Answer is  ",X
400 IF X=A THEN PRINT TAB(14,13);CHR$(131);CHR$(136);
"CORRECT":C=C+1:FOR S=-15 TO 0:SOUND 1,S,200,1:NEXT S
410 IF X<>A THEN PRINT TAB(1,13);CHR$(131);CHR$(136)
;"WRONG";CHR$(135);CHR$(137); The correct answer is
";A :SOUND 0,-15,10,10
420 PRINTTAB(3,23); "Press SPACE BAR to continue."
430 ENDPROC
440 DEFPROCmg
450 RESTORE 1950
460 CLS
470 C=0
480 FOR I=1 TO 10
490 READ N:IF N=999 THEN 600
500 READ C$
510 READ A
520 @%=&20205
530 PRINT TAB(0,2);CHR$(132);CHR$(157);CHR$(131);
Calculate the mass in grams of"
540 PRINT TAB(0,3);CHR$(132);CHR$(157);CHR$(131);"
;N;" mole of ';C$
550 PROCsetup
560 REPEAT UNTIL GET=32
570 CLS
580 NEXT
590 @%=10
600 PROCcheck
610 IF GET=89 THEN PROCmg ELSE PROCmenu
620 ENDPROC
630 DEFPROChmg
640 CLS
650 RESTORE 1980
660 C=0
670 FOR I=1 TO 10
680 N=RND(15)/10
690 @%=&20205
700 READ M: IF N=999 THEN 800
710 READ C$
720 A=INT(N*M*100+0.5)/100
730 PRINT TAB(0,2);CHR$(132);CHR$(157);CHR$(131);"
Calculate the mass in grams of"
740 PRINT TAB(0,3);CHR$(132);CHR$(157);CHR$(131);'
";N;" mole of  ";C$
750 PROCsetup
760 REPEAT UNTIL GET=32
770 CLS
780 NEXT
790 @%=10
800 PROCcheck
810 IF GET=89 THEN PROChmg ELSE PROCmenu
820 ENDPROC
830 DEFPROCcheck
840 CLS
```

Continued over the page

```
850 PRINT TAB(3,4);"You answered ";C;" correctly out of 10."
860 IF C<10 THEN 870 ELSE 970
870 FOR N=1 TO 6
880 SOUND 1,-15,101,1
890 SOUND 1,-15,149,1
900 SOUND 1,-15,129,1
910 NEXT
920 SOUND 1,-15,101,1
930 PRINT TAB(12,9);CHR$(141);CHR$(134);CHR$(136);"W E L L "
940 PRINT TAB(12,10);CHR$(141);CHR$(134);CHR$(136);"W E L L "
950 PRINT TAB(12,12);CHR$(141);CHR$(134);CHR$(136);"D O N E "
960 PRINT TAB(12,13);CHR$(141);CHR$(134);CHR$(136);"D O N E "
970 PRINT TAB(3,18);"Press Y to try again or any key to"
980 PRINT TAB(3,20);"return to index."
990 ENDPROC
1000 DEFPROCwkmg
1010 CLS
1020 PRINT TAB(2,2);CHR$(131);"WORKED EXAMPLE OF MOLES TO GRAMS "
1030 PRINT TAB(5,4);CHR$(131);"Calculate the mass in grams"
1040 PRINT TAB(8,5);CHR$(131);"of 0.5 mole of CH4 "
1050 FOR D=1 TO 8000 : NEXT D
1060 PRINT TAB(15,7);CHR$(133);"ANSWER"
1070 PRINT
1080 PRINT CHR$(133);"The formula CH4 means that there is"
1090 PRINT CHR$(133);"1 CARBON atom and 4 HYDROGEN atoms."
1100 FOR D=1 TO 8000 : NEXT D
1110 PRINT
1120 PRINT CHR$(134);"To find the mass of 1 MOLE of CH4"
1130 PRINT CHR$(134);"add together the Relative Atomic"
1140 PRINT CHR$(134),"Masses of the individual atoms
1150 FOR D=1 TO 8000 : NEXT D
1160 PRINT TAB(9,16);CHR$(131);"r.m.  C=12   H=1"
1170 PRINT TAB(7,17),CHR$(131),"CH4 = 12 + (4x1) = 1
1180 PRINT CHR$(131);"Mass of 1 mole CH4 (MOLAR MASS) = 16g."
1190 PRINT CHR$(131);"Mass of 0.5 mole CH4 = 16 x 0.5 = 8g."
1200 FOR D=1 TO 8000 : NEXT D
1210 PRINT
1220 PRINT CHR$(133);"  MASS = MOLAR MASS x NO. OF MOLES"
1230 PRINT
1240 PRINT CHR$(136);CHR$(134);"PRESS SPACE BAR TO RETURN TO INDEX"
1250 IF GET=32 THEN PROCmenu
1260 ENDPROC
1270 DEFPROCgm
1280 RESTORE 1990
1290 CLS
1300 C=0
1310 FOR I=1 TO 10
1320 READ N:IF N=999 THEN 1430
1330 READ C$
1340 READ A
1350 @%=&20205
1360 PRINT TAB(0,2);CHR$(132);CHR$(157);CHR$(131),"Calculate the number of moles in
1370 PRINT TAB(0,3);CHR$(132);CHR$(157);CHR$(131),"";N;" grams of ";C$
1380 PROCsetup
1390 REPEAT UNTIL GET=32
1400 CLS
1410 NEXT
1420 @%=10
1430 PROCcheck
1440 IF GET=89 THEN PROCgm ELSE PROCmenu
1450 ENDPROC
1460 DEFPROChgm
1470 CLS
1480 RESTORE 2000
1490 C=0
1500 FOR I=1 TO 10
1510 G=RND(100)
1520 READ M : IF M=999 THEN 1650
1530 READ C$
1540 Z=G/M
1550 A=INT(Z*100+0.5)/100
1560 @%=&20205
1570 PRINTTAB(0,2);CHR$(132);CHR$(157);CHR$(131);"Calculate the number of moles in"
1580 PRINTTAB(0,3);CHR$(132);CHR$(157);CHR$(131);"";G;" grams of ";C$
1590 PRINT TAB(3,11);"(2 Decimal places)"
1600 PROCsetup
1610 REPEAT UNTIL GET=32
1620 CLS
1630 NEXT
1640 @%=10
1650 PROCcheck
1660 IF GET=89 THEN PROChgm ELSE PROCmenu
1670 ENDPROC
1680 DEFPROCgmwk
1690 CLS
1700 PRINT TAB(2,2);CHR$(131);"WORKED EXAMPLE OF GRAMS TO MOLES"
1710 PRINT TAB(3,4);CHR$(131);"Calculate the number of moles"
1720 PRINT TAB(9,5);CHR$(131);"in 11g of CO2"
1730 FOR D=1 TO 8000 : NEXT D
1740 PRINT TAB(15,7);CHR$(133);"ANSWER"
1750 PRINT
1760 PRINT CHR$(133);" The formula CO2 means that there is"
1770 PRINT CHR$(133);" 1  CARBON atom and 2  OXYGEN atoms."
1780 FOR D=1 TO 8000 : NEXT D
1790 PRINT
1800 PRINT CHR$(134);" To find the mass of 1 MOLE of CO2"
1810 PRINT CHR$(134);" add together the Relative Atomic"
1820 PRINT CHR$(134);" Masses of the individual atoms "
1830 FOR D=1 TO 8000 : NEXT D
1840 PRINT TAB(9,16);CHR$(131);"r.m.  C=12   O=16"
1850 PRINT TAB(7,17);CHR$(131);"CO2 = 12 + (16x2) = 44"
1860 PRINT CHR$(131);"Mass of 1 mole CO2 (MOLAR MASS) = 44g."
1870 PRINT CHR$(131);"No. of moles in 11g CO2 = 11/44 = 0.25"
1880 FOR D=1 TO 8000 : NEXT D
1890 PRINT
1900 PRINT CHR$(133);"   NO. OF MOLES = MASS/MOLAR MASS"
1910 PRINT
1920 PRINT CHR$(136);CHR$(134);"PRESS SPACE BAR TO RETURN TO INDEX"
1930 IF GET=32 THEN PROCmenu
1940 ENDPROC
1950 DATA 1,MgO,40,1,N2,28,1,CO2,44,0.5,NaOH,20,0.2,CaCO3,20
1960 DATA 2,NH3,34,0.2,KNO3,20.2,0.6,MgSO4,72,0.4,Ca(OH)2,29.6,0.1,NaCl,5.85
1970 DATA 999
1980 DATA 12,C,32,O2,18,H2O,111,CaCl2,28,CO,56,CaO,85,NaNO3,64,SO2,138,K2CO3,36.5,HCl,999
1990 DATA 4,H2,2,9,H2O,0.5,2.8,N2,0.1,71,Cl2,1,3.2,CH4,0.2,22,CO2,0.5,5.1,NH3,0.3,9.6,Mg,0.4,11.2,CaO,0.2,9.8,H2SO4,0.1,999
2000 DATA 34,H2S,32,O2,85,NaNO3,136,CaSO4,40,NaOH,100,CaCO3,95,MgCl2,100,KHCO3,40,MgO,142,Na2SO4,999
```

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MONTY MOLE	6 95	5 21	AZTEC	7 95	5 96	SUMMER GAMES	14 95	10 94	RETURN TO EDEN	9 95	7 36
KOKO TONI WILF	5 95	4 50	TORNADO LOW LEVEL	5 95	4 50	STORM WARRIOR	7 95	5 70			
BEACH HEAD	7 95	5 90									

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Calling long distance . . .

Your Spectrum & QL should be talking to each other — Alan Turnbull shows how

It is a fair assumption to make that most of the owners of the QL, like myself, already own a ZX Spectrum and have progressed from that machine rather than purchasing the QL as their first computer.

People in this situation will, most probably, want to take full advantage of the QL and ZX Spectrum networking facilities — *Qlan* and *ZX Net*, respectively.

This article, then, introduces a routine for use with the following minimum equipment: a Sinclair ZX Spectrum, a Sinclair ZX Interface 1, a Sinclair QL and a ZX Net/Qlan networking lead.

The routine, when loaded into the QL, will enable the sending of ZX Spectrum programs over the network and the saving of them on QL Microdrive, with simple conversion done as well.

The program at the heart of it all can be seen in Figure 1. It receives listings of programs (ie, files generated by the Basic command *List*) from the ZX Spectrum, converts their format and sends them to QL Microdrive *mdv1*, ready for subsequent loading and editing with the QL commands *Load mdv1 ‹file name›* and *Edit ‹start›, ‹increment›*.

Upon running the program in Figure 1 on the QL, you will be presented with a title screen and prompt 'Enter the name of ZX Spectrum Program:', to which you should reply with the *name* of a file to be generated on QL Microdrive *mdv1*, and by which you wish the program to be called.

A file with this name will be generated and you will be prompted with the message 'Receiving and accessing Microdrives'. At this point, you should have the program you wish to send loaded into the ZX Spectrum and execute the direct commands listed in Figure 2.

A delay will follow, the duration of which will depend on the length of the program to be received, and the QL Microdrive will whizz around quite a lot. The whole process is completed when the QL display reads 'Reception completed', the flashing cursor re-appears and the QL Microdrive *mdv1* stops.

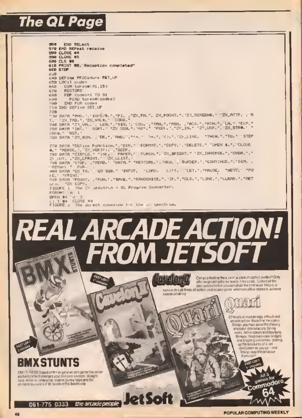
The process can be checked by executing on the QL the command: *Copy mdv1 ‹file name› TO scr*, whereupon the listing will be displayed on the QL screen. The ultimate test is the *Loading* of the file as a program from *mdv1*. You will find in practise that a lot of program lines will have the keyword *Mistake* inserted in them. You will have to go through the program with the multiple edit command, changing obvious syntax violations. The most common will be that of having no brackets around arguments for functions.

The program in Figure 1 has a set-up procedure that places expansions of the keywords in an array. Certain keywords on the ZX Spectrum do not work on the QL; these have been prefixed by *ZX*, so that you may, if you wish, give definitions for them in *Def Fn* and *DefProc* constructs, where appropriate keywords have been changed to their new name.

Obviously, only limited conversion can be done because of the great difference between the computers. You will be amazed, however, at just how many of your simple ZX Spectrum programs will travel across to the QL.

```
100 REMark ZX Spectrum/QL Program converter
110 REMark   (c) July 1984, Alan Turnbull
120 MODE 256
130 PAPER 1
140 INK 7
150 FOR channel=0 TO 2
160   CLS #channel
170 END FOR channel
180 SET_UP
190 CSIZE 0,1
200 AT 0,2 PRINT "ZX Spectrum ",CHR$(189),' QL Program Converter
210 AT 2 7 PRINT "(c) 1984, Alan Turnbull"
220 CSIZE 2,0
230 FOR e=2.5 TO 0 STEP -5E-2
240   FILL 1
250   INK RND(0 TO 7)
260   CIRCLE 80,35,30,e,0
270   BEEP 32767,0,2,4,8,16
280   FILL 0
290 END FOR e
300 INK 7
310 INPUT #0,"Enter name of ZX Spectrum program "&CHR$(10) ;file$
320 NET 2
330 OPEN_IN #4,neti_1
340 OPEN_NEW #5 "mdv1_"&file$
350 CLS #0
360 PRINT #0 "Receiving and accessing Microdrives'
370 REPeat receive
380    IF EOF(#4) THEN EXIT receive
390    LET received_byte$=INKEY$(#4)
400    LET received_code=CODE(received_byte$)
410    SELect ON received_code
420      = 32 TO 127
430         PRINT #5,received_byte$,
440      = 13
450         PRINT #5,CHR$(10),
460      = 165 TO 255
470         PRINT #5,' '
480         LET char=1
490         REPeat send_ch
500           LET ch$=token$(received_code-165+1,char)
510           IF ch$= .' THEN EXIT send_ch
520           PRINT #5,ch$
530           LET char=char+1
540         END REPeat send_ch
550         PRINT #5," ",
```

Continued over the page



```
560   END SELect
570 END REPeat receive
580 CLOSE #4
590 CLOSE #5
600 CLS #0
610 PRINT #0,"Reception completed"
620 STOP
630
640 DEFine PROCedure SET_UP
650 LOCal codes
660   DIM token$(91,15)
670   RESTORE
680   FOR codes=1 TO 91
690     READ token$(codes)
700   END FOR codes
710 END DEFine SET_UP
720
730 DATA "RND.","INKEY$.","PI.","ZX_FN.","ZX_POINT.","ZX_SCREEN$.","ZX_ATTR.","A
T.","ZX_TAB.","ZX_VAL$.","CODE."
740 DATA "ZX_VAL.","LEN.","SIN.","COS.","TAN.","ASN.","ACS.","ATN.","LN.","EXP."
750 DATA "INT.","SQRT.","ZX_SGN.","ABS.","PEEK.","ZX_IN.","ZX_USR.","ZX_STR$.","
CHR$.","NOT."
760 DATA "ZX_BIN.","OR.","AND.","<=.",">=.","<>.","ZX_LINE.","THEN.","TO.","STEP
."
770 DATA "DEFine FuNction.","DIR.","FORMAT.","COPY.","DELETE.","OPEN #.","CLOSE
#.","MERGE.","ZX_VERIFY.","BEEP."
780 DATA "CIRCLE.","INK.","PAPER.","FLASH.","ZX_BRIGHT.","ZX_INVERSE.","OVER.","
ZX_OUT.","ZX_LPRINT.","ZX_LLIST."
790 DATA "STOP.","READ.","DATA.","RESTORE.","NEW.","BORDER.","CONTINUE.","DIM.",
"REMark.","FOR."
800 DATA "GO TO.","GO SUB.","INPUT.","LOAD.","LIST.","LET.","PAUSE.","NEXT.","PO
KE.","PRINT."
810 DATA "POINT.","RUN.","SAVE.","RANDOMISE.","IF.","CLS.","LINE.","CLEAR.","RET
urn.","ZX COPY."
```

FIGURE 1 The ZX Spectrum → QL Program Converter.

```
FORMAT n 1
OPEN #4 n 2
LIST #4  CLOSE #4
```

FIGURE 2 The direct commands for the ZX Spectrum.

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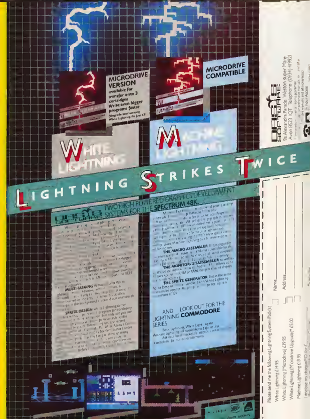

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Clock

on QL

This is a program utilising the QL 'clock — whilst it can't show the seconds actually ticking by while we're working with another program it keeps going and is always spot on whenever we type in time to set it in motion again.

I've used high line numbers for the Procedure time and put it on channel 13 so it's out of the way of everything else. (Hence all those hash-13 designators which are essential in this kind of exercise.)

Lines 32738 to 32741 give a narrow green strip slightly above the usual TV display panel. This position can be modified to suit individual receivers by altering the last figure (the y co-ordinate) of 32738. I find 4 works best for me, but you can go up or down in steps of one or two until you find the setting that's best for your particular equipment.

The *Repeat* cycle displays the date and time in yellow characters on a black background. *Day$* seems to supply the day of the week automatically but *Date$* needs to be reset each time you power up. The formula is *Sdate* (ie. set date) followed by the year, month, day, hour, minute and second.

For example *Sdate* 1984,8,13,18,0,0 stands for 1984 Aug 13 18:00:00

Lines 32725 to 32729 open a window for the standard displays of channels 1 and 2 with the addition of a green border. When you are working on a program, *Break* and *time* let you see the seconds going by without disturbing your display in the main window.

```
32720 :
32721 REMark ===
32722 REMark TIME
32723 REMark ===
32724 :
32725 WINDOW 490,200,12,16
32726 BORDER 2,4
32727 PAPER 0
32728 INK 6
32729 CLS
32730 CLS #0
32731 time
32732 :
32733 REMark ==========
32734 REMark definition
32735 REMark ==========
32736 :
32737 DEFine PROCedure time
32738  OPEN #13,scr_400x14a16x4
32739  BORDER #13,2,4
32740  PAPER #13,4
32741  CLS #13
32742  REPeat cycle
32743   AT #13,0,7: PAPER #13,0: INK
#13,6: PRINT #13,DAY$!DATE$
32744  END REPeat cycle
32745 END DEFine time
32746 :
32747 REMark ========
32748 REMark END TIME
32749 REMark ========
32750 :
32751 REMark copyright
32752 REMark francis cameron
32753 REMark 040813
32754 :
```

Clock
by F Cameron

The Music Box

Play back

Those of you who are interested in pursuing the field of computer music further could do worse than buy a copy of Hal Chamberlin's mammoth book — *Musical Applications of Microprocessors* (Hayden Book Company, New Jersey, 1980). I shan't be plugging my own book until it comes out under the PaperMac imprint next year.

Chamberlin's book, although already showing its age and not aimed at the hobbyist, probably gives you the most comprehensive possible introduction to the field. Read it, and you'll understand just how exciting and complex the subject is. It weighs in (and I do mean weigh) at 661 pages and will set you back the price of a reasonably good meal for two (wine included, though unfortunately, not with the book).

Now comes the news that the author of the bible has been busy soldering and has produced the DigiSound 16, a 2-channel, 16-bit digital processing unit for use with any computer that has two eight-bit parallel ports (available, for example, on any computer using a 6522 interfacing chip, which is to say any 6502- or 6510-microprocessor-based computer such as the BBC or Commodore).

What's exciting about the DigiSound is that it offers parallel processing which has got to be the next big thing, since serial processing, although electrically more reliable (you can use longer leads), is either too slow to be very useful or becomes unreliable.

The synthesiser manufacturers' MIDI standard for plugging computers into electronic instruments is a serial system which compromises between speed and reliability by using a data transmission rate of 31.5 Kbaud. This is above the maximum rate for RS-232 and similar standards, which is 19.2 Kbaud, and so requires additional circuitry. In principle, a parallel system (as used, for example, with Centronics printers) should be fairly easy to implement and could be fast enough to provide really sophisticated sound processing. The chief problem will be that you wouldn't want to take a parallel system on stage with you. For that purpose, MIDI — with its simple cables which can be several meters long without loss of signal — will doubtless remain, although a serial-to-parallel converter, allowing MIDI instruments to be controlled by parallel-wired computers, should not be beyond the wit of the hackers and hobbyists.

Anyway, to find out about the DigiSound 16 (which can be used for digitising, sampling, sequencing and playing back sounds), write to Micro Technology Unlimited, 2806 Hillsborough Street, Raleigh, North Carolina 27607, USA.

Gary Herman

The Music Box is a new weekly column with news reviews and readers comments on all aspects of micros and music.

Any readers with experience of computer music making or companies with see product news are invited to write to drop a line explaining what they're doing to: Gary Herman, The Music Box, 12-13 Little Newport Street, London WC2R 3LD

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Open Forum

Top Ten

on Spectrum

This will display a top ten chart of your own creation. It asks whether you wish to make an entry – answer Y or N to the prompt or *Stop* (symbol shift, a) to stop the program.

If you make an entry enter the number for your entry at the appropriate prompt. Quotes do not appear around the cursor during Input even though it requires a string.

Program notes

3	*Pokes* Caps on
10–30	Print top ten display
50–60	Input whether an entry is to be made
70–99	Input whether a copy is required
100–110	Input number for entry
120–145	Entry
150	Print Entry
160	Loop Back to 50

```
  1 REM TOP TEN
  2 REM BY ALAN PERSSE, 1983
  3 POKE 23658,8
 10 FOR A=1 TO 10
 20 PRINT AT A*2-1,4;A
 30 NEXT A
 40 PRINT AT 0,12;"TOP TEN"
 50 INPUT "DO YOU WANT TO MAKE
ENTRIES ?"' LINE A$
 51 IF A$=" STOP " THEN STOP
 55 IF A$<>"Y" THEN GO TO 60
 60 IF A$="Y" THEN GO TO 100
 70 INPUT "COPY ONTO PRINTER ?"
' LINE A$
 80 IF A$="Y" THEN GO SUB 98
 85 IF A$=" STOP " THEN STOP
 90 GO TO 60
 98 COPY
 99 RETURN
100 INPUT "NUMBER FOR ENTRY ?"'
LINE A$
101 IF A$=" STOP " THEN STOP
102 LET N=VAL A$
105 IF LEN A$<1 OR LEN A$>2 THE
N GO TO 100
110 IF N<1 OR N>10 THEN GO TO 1
00
120 FOR A=1 TO N
125 NEXT A
140 INPUT "WHAT IS THE ENTRY ?"
' LINE A$
145 IF A$=" STOP " THEN STOP
150 PRINT AT A*2-3,4;A-1;" ";A$
160 GO TO 50
```

Top Ten
by Alan Persse

Arcade Avenue

Heavy hype

What has happened to Mikro-gen? After producing a series of what can only be called average programs they have suddenly leapt to the forefront of arcade action with their excellent Wally Week series. If, like me, you were taking the adverts with a pinch of salt after the fuss about *Laserwarp*, rest assured that *Automania* really is superb and *Pyjamarama* is even better. In fact, I think the latter is my current favourite Spectrum game.

Another heavily hyped new release in the arcade adventures table, is Elite (formerly Richard Wilcox) Software's *Kokotoni Wilf*. It's a matter of opinion whether or not it lives up to all the claims about it. I find it a trifle slow but the different time zones really do make the graphics more interesting and it is fiendishly difficult to play. Unlike JSW there is no problem seeing how to get at most of the objects — rather the problems arise because it needs exact positioning and control of Wilf to avoid hitting the monsters. Anyway it certainly seems to work because I have had a couple of letters from Simon Clark of Watford and Charles Standford of Mansfield who are both more than lavish with their praise.

"I was wandering around in the second time zone when I discovered a secret passage in the castle. This is located in the bottom of the moat and emerges in the cellar underneath the castle. The reason I am writing this is that having reached the third time zone I can't seem to find a way into the top left hand screen. Does anyone know of a secret passage that would help me?"

Whilst on the subject of arcade adventures, congratulations to Dave Allen of Roche in Cornwall for finishing *Rapscallion* (is he the first?) and thanks to M Parkes of Leeds for telling me the way to get further in *Monty Mole*. Apparently the trick is to drop on to the railway truck and keep running until you reach the next screen.

Incidentally I think I mentioned before that I welcome your comments on what games you think are brilliant and which ones are awful. We can't review every game and we certainly can't test them to the same degree as you can at home. So thanks again to the above and also to Gary Burrows of Halewood in Liverpool who writes "Avoid the following two games like the plague — they score zero for playability: Melbourne House's *Terro Daktil 4D* and Imagine's *Cosmic Cruiser*." Gary also sends in these high scores — *Penetrator* (Melbourne House) 105,260; *Jumping Jack* (Imagine) 6225 with 13 hazards; *Chuckie Egg* (A&F) 202,730 on level 20.

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to Tony Kendle, Arcade Avenue, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD

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Open Forum

Message

on Dragon

This secret message program uses two arrays as dictionaries one to code and one to decode The program quickly produces code direct to tape the decoding is to the screen one screen full at a time

Lines 110 to 160 creates the dictionaries and once created should be saved to tape as once lost can not be duplicated. Further copies can be made using *Save Code* 2 Lines 170 to 210 save the code. Lines 220 to 270 load the code from tape. Lines 280 to 380 load the message to tape as it is typed in, you will have to wait whenever the tape is running Lines 390 to 470 decode the message and print it on the screen.

Variables

I array identifier, constantly changing
A letter identifier
S number of letters on the screen
C$ code name the name you give the saved dictionarys
EC (27,27) coding array, totally random
DC (27,27) decoding array

Only Alpha characters can be used all others are treated as spaces. The code is a substitution type made more difficult to crack by the use of a different code for each letter, selected by the value of the decoded letter in the decoding array I = DC(I,A)) The program uses just over 9K.

```
10 DIMEC( , ) D( )
 0 CL
40 PRINT"NEW CODE             1"
50 PRINT"SAVE CODE             "
60 PRINT"LOAD CODE            -"
65 PRINT"SEND MESSAGE         I"
70 PRINT"RECIEVE MESSAGE      <"
80 GOSUB490
90 CL ;ONINSTR(GOTO110 170,220,280,390
100 GOTO 0
110 PRINT"PLEASE WAIT";FORI=1 TO27;A=RND(-TIMER)
120 FORI 1 TO27 EC(I I) 1 NEXTI
130 FORJ=1 TO50:A=RND(27):B=RND(27):C=EC(I A)=EC(I B)=EC(I
,B):EC(I B)=C:NEXT
140 FORJ=1TO27:DC( I EC( I J))=J
150 NEXT I
160 PRINT"SAVE IT NOW"
170 INPUT"CODE NAME";C$
180 OPEN"O" #-1 C$
190 FORI 1 TO27 FORJ 1 TO27
200 PRINT#-1 EC(I J);DC(I J)
210 NEXTJ I:CLOSE#-1:GOTO20
220 INPUT"CODE NAME",C$:PRINT SEARCHING
230 OPEN"I" #-1 C$
240 PRINT FOUND ";C$
250 FORI=1 TO27:FORJ=1 TO27
260 INPUT#-1 EC( I J) DC( I J)
270 NEXTJ I:CLOSE#-1:GOTO20
280 GOSUB490
290 OPEN O" #-1 CODE"
300 GOSUB490
310 A=ASC(Q$)-64
320 IFQ$=CHR$(1 )   G 300
330 IFA<1 ORA 2  THENA=27:PRINT   :GOTO350
340 PRINTCHR$(A+64 ;
350 PRINT#-1 CHR$(EC(I A)+64)
360 I=DC(I,A)
370 GOTO300
380 CLOSE#-1:GOTO20
390 GOSUB500
400 S=0:OPEN"I" # 1,"CODE"
410 IFEOF( 1) THENCLOSE# :GOTO480
420 INPUT#-1,Q$.A=ASC Q$) 64
430 IFDC I A)=27 THE PRINT" ";:GOTO450
440 PRINTCHR$(DC(I A)+64 ;
450 I=DC(I,DC(I,A))
460 S=S+1 IFS/500 THEN GOSUB490:S=0
470 GOTO410
480 GOSUB490:GOTO20
490 Q$ INKEY$:IFQ$=""THEN490 ELSERETURN
500 PRINT" ODE LETTER" :GOSUB490:CLS
510 IFQ$<"A" ORQ$ "Z" THEN30
520 I=ASC(Q$)-64 RETURN
```

Message
by J Jackman

Microradio

GW6JJN

Dots and dashes . . .

So that Vic 20 owners do not feel left out in the cold as one reader recently complained to Microradio, I shall concentrate this week on the software available for the Vic 20 in the radio computing line.

First I shall deal with morse code and a program from EP Electronics of 4 Housman Walk, Kidderminster (0562 753893) This program is designed as a morse reader and EP have published a similar program for the Spectrum which was reviewed in Microradio some months ago The idea of using a computer to decode morse is not a new one by any means and the original problem of timing still remains. Computers, being very precise machines, find it difficult to cope with a transmission such as morse code, where the rate of sending can vary several times within a single word. Fortunately, many morse transmissions on the short wave are sent by machines such as those found in automatic weather stations. On the amateur bands, however, the standard of morse as far as a computer is concerned, leaves much to be desired Morse code came before digital computers were about and is designed for people to people communication.

If you do wish to know what all those dots and dashes are saying without learning morse, then plug in your Vic and off you go JEP mention that a small interface is required for the Vic which consists basically of a transistor and a couple of diodes — total cost about a pound and the work of an hour or so to construct. Full details come with the tape.

Once all is set up and the tape is loaded, one is in the 'read' mode and the screen displays *Ready* Then you should tune to a reasonable sounding morse transmission on the radio receiver If all is well then sensible words should start appearing in some recognisable language on the screen. Don't expect necessarily that it will be in English. If nothing happens, then it means that the volume is probably too high, as too much background noise will produce rows of Es and Is If the program is faced with too many changes in morse speed it will lock-up, although a reset facility is provided.

There is a serious and fairly successful attempt in the program to cope with the speed variation problems and the software will track the changes within limits. In short the program works well provided that the signal is reasonably clean and consistent. The decoding of morse is a tough algorithm at best and JEP have done a good job for Vic owners there is no doubt about that The real question is whether it is worth using a computer to decode morse. Until the day comes when all morse is sent by machine, it will be a struggle If a machine is to be used to send morse, then why not use RTTY, AMTOR or Packet Radio — all of which are much more efficient, faster and less prone to error

The second program for the Vic is the G4BMK Vic 20 RTTY package This program is very similar to the CBM64 version recently reviewed by the same author Vic 20 RTTY costs £10 for the tape and instructions and is excellent. More details from Grosvenor Software on 0323 893378

Ray Berry GW6JJN

This series of articles is designed for radio and microcomputer enthusiasts alike If you have any queries that you want answered hints and tips to share or topics that you would like to see covered write to Ray Berry Microradio *Popular Computing Weekly* 12 13 Little Newport Street, London WC2R 3LD

Open Forum

Flash

on Spectrum

This is a short routine to be poked anywhere in Ram. When called (just use *Usr address*) all the character positions will be either set to flash or reset depending on their original state Colour and brightness are unaffected.

The subroutine can be used to simulate an on screen explosion by calling the subroutine twice with a short delay between call. You can also try changing bit 8 from 128 to 64, the will charge *Bright* instead of *Flash*.

```
0   33        1   0
2   88        3   14
4   3         5   5
6   0         7   128
8   238       9   128
10   119      11   35
12   15       13   249
14   13       15   288
16   121      17   254
18   1        19   32
20   248      21   5
22   192      23   24
24   238

LD HL,22528
LD C,3
LD B,0
LD A,(HL)
XOR 128
LD (HL),A
INC HL
DJNZ -7
DEC C
RET Z
LD A,C
CP 1
JR NZ -15
LD B,192
JR -18
```

Flash
by G Allan

Book Ends

Book *Learning With Adventure Programs* **Price** *£5.95* **Micro** *Mainly Spectrum and Commodore 64, plus BBC* **Supplier** *Melbourne House (Publishers) Ltd, Church Yard, Tring, Herts.*

While most so-called educational programs are based on arcade games, Rosetta McLeod's book investigates the teaching potential of three adventures, *The Hobbit*, *Valhalla* and *Snowball* plus the adventure writing utility, *The Quill*

It is an interesting initial discussion document, based on classroom experience and aimed particularly at the English teacher However, with only 88 pages it is rather expensive, and its orientation towards schools makes it less useful for parents working alone with their children.

Greater discussion of the deductive learning process involved in playing an adventure would have broadened its appeal, but it is unique and should prove valuable for teachers

Book *Logo Programming* **Price** *£8.95* **Micro** *Any able to run Logo* **Supplier** *Century Publishing Portland House, 12-13 Greek Street, London W1V 5LE.*

The *QL Advanced User Guide* is written by the same author as the equivalent book on the BBC, which is well respected. Mr Dickens did a lot of work when he produced the Beeb version to find out his facts, but he did very little work for the *QL* version, as it is a direct re-print of Sinclair's own *QDOS* Manual.

The first few pages give a very brief reminder of the 68008 instruction set, followed by the *QDOS* system calls, though some are a bit skimpy, and the errors and inaccuracies in Sinclair's manual remain. Most of the vectors in the *QL* ROM are also explained, but four of them get no mention, presumably because Sinclair's manual ignores them.

A very good description is given of the way SuperBASIC works, including how to add your own machine-code procedures and functions, and at the end of the book a complete hardware/software description is given of a parallel printer interface

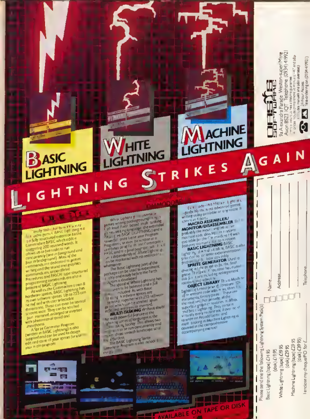
Throughout the book reference is only made to the *JM* ROM version, and several things covered do not work or even exist in the earlier *AH* version, which some owners still have. If you do not have the official *QDOS* manual then this book will be helpful to you, but there is little additional information in it.

Book *QL Advanced User Guide* **Price** *£10.95* **Micro** *QL* **Supplier** *Adder Publishing PO Box 148 Cambridge CB1 2EQ*

This book will not teach you to program in Logo, but neither will you need access to a computer running the language to find it interesting.

For many people, Logo links children and 'turtles' However, while the book investigates its educational role, it goes beyond graphics to concentrate on the language's philosophy and its ability to not only develop programming skills but also an understanding of logic in the world at large

Concluding with several useful appendices and many examples of programs, it should stimulate any programmer to consider his or her usual language



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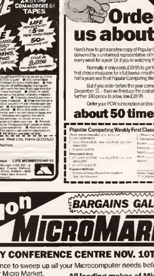

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Tony Bridge's Adventure Corner

Do-it-yourself

Those of you who have been following *The Grand Elf* in his wanderings through Adventureland will remember the names of Alan and Daphne Davis. They have written to me over the months with maps and hints on *The Hobbit* and Hewson's Quest, as well as other adventures that they have completed.

Now, along with Sue Gazzard, who was also an occasional correspondent (and author of *Lords of Time*), and Hugh T Walker who, my spies tell me, is also writing his own adventure, Alan and Daphne have decided to join the ranks of adventure-writers, and produce their own. Alan was always interested in character inter-reaction, and this is a strong feature of his program, *The Journey*, now released by Temptation Software.

The adventure runs in real time, so that, should the player sit doing nothing, the world around will carry on with its affairs, the odd character will wander past as you wonder what to do, and, if you're not quick enough in typing in a command, it's quite possible that the character will wander off before you can *Kill, Kick* or *Rob* him!

As well as other characters having a life of their own, they may be affected by the player — for example, one character may be directed to fight another if the player is too weak or prudent to undertake the task himself: and another character's inventory may be requested.

The scenario is basic sub-Tolkien — your quest is to seek not the legendary White Ship of the Elves and be carried to a distant land where your true destiny as an adventurer may be fulfilled (sounds like Majorca!)

After a nice title screen, the adventure starts with you, the player, being awakened by the birds. After exploring the first few locations, you may be forgiven for thinking that this is a text-only adventure — but, lo and behold, suddenly there are graphics! And they're not bad at that.

The predeliction of the author may be seen in the Status table which can be called up at will — your character (and indeed, all the others) possesses three attributes: Intelligence, Strength and Experience, each of which will be affected as play progresses, sometimes decreasing and sometimes increasing. Completion of this adventure is going to take quite some time, so there is a high-speed *Save* and *Load* facility available.

As I said before other characters will go about their business while you decide what to do. In practice, the flashing input cursor at the bottom of the screen stays active for about 20 seconds, after which time control is taken away from the player for a couple of seconds while all the other creatures of this world are given their turn.

This isn't too much of a hardship, though, as all the player has to do is type in one letter, and then can go away and make a cup of tea, secure in the knowledge that the program will wait "4E4" (as Phippe would say) for the *Enter* key to be pressed.

The location descriptions are a little sparse, and I quite often found myself in an endless loop in which map-making proved impossible — maybe this is part of the author's attempt at cunningness, but I find this kind of deviousness merely frustrating.

Having said all this, I have to say that there is a fair amount of atmosphere in *The Journey*, with runic codes to be deciphered (examine everything, as clues to the code are likely to turn up anywhere!) and those cursed characters wandering in and out all the time. Alan Davis has kindly included, on the cassette inlay, a complete list of the words you'll need (or synonyms thereof) to complete the adventure. So no more wondering how to open a door: if the word isn't in the list, you're on the wrong track anyway.

The usual verb-noun combination is recognised, but in certain cases the player may type in up to four words, or 32 characters. I would say that this is a very good compromise between the inflexibility of a mere two words, and the overkill of 256 characters.

So, *The Journey* is a pretty good implementation of a Hack and Slay Questadventure — I haven't, yet, got too far with it, but this sort of program at least keeps the player awake, so there is a good chance that I will persevere and give you a progress report in the near future. I feel that the game is a little out-of-date now — but Alan and Daphne Davis will, I hope, come up with something a little more innovative, now that the hard work is out of the way. Temptation Software, 27 Cinque Ports Street, Rye Sussex.

I said the Davis were a keen couple of adventurers, and I have just heard from them again — this time about *Lords of Midnight* and *Sherlock*. Alan says: "*Midnight* is wonderfully complex and visually stunning. Morkin's Quest is perhaps a little be too easy, but if you get him stuck safely out of the way somewhere, with the Ice Crown in his pocket, you can more or less forget about him and get on with "The Epic." A nifty challenge is to set yourself the target of obliterating all trace of Doomdark's armies without losing a single Lord of the Free. I nearly managed it, recapturing every Keep and Citadel (leaving Ushgarak till the very last) but, sadly failed.

"And as for *Sherlock* — oh, glorious! All the delectable Philip Mitchell bugs are there, unexpected crashes, sudden screensful of rubbish — but who cares? We are utterly baffled. How on earth do we *prove* that Major Foulkes was in the Opium Den the night of the murder? And why won't Lestrade believe that Tricia Fender blackmailed Mrs Brown even when we have the incriminating letters?"

Don't ask me Alan, I haven't got far with the thing yet! But I'm sure that some adventurer out there will have solved the puzzle — if so, let me know.

I've spent a lot of time on just one new adventure this week — partly because it is an interesting game in its own right, but also because it's nice to see regular readers having a go! Next week, I'll be looking at some new programs, concentrating on more of the latest crop of Quilled adventures.

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This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter. So if you have an Adventure you want reviewed, or if you are stuck in an Adventure and cannot progress any further write to Tony Bridge, Adventure Corner, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 3LD.

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Peek & Poke

Memory space

D Leitch of Leven, Fife, writes:

Q I am writing a games program which requires a high resolution background to the game. I have achieved this but it takes a lot of memory space. I have seen on a few tape magazines for the Spectrum *Screens* which have been stored in memory and are able to be called on very quickly.

I am wondering how this is done and how much memory it requires. I have a little knowledge of machine code.

A Screens can be stored in memory in the same way as any other items of data. They are normally stored as pieces of code, ie, above *Ramtop*. To store a whole screen takes 6912 bytes of memory, 6144 bytes for the display file and 768 for the attributes. Screen display switching is normally done via machine code.

What happens is that the desired screen is copied to the Spectrum display and attribute files. If you are interested in storing partial screen displays then Bob Pritchard's article in *PCW*, Vol 3 No 27 entitled 'Screen Savers' is one that you should read.

Repair service

N G Tierney of London, writes:

Q In March I had my 16K Spectrum upgraded to 48K. Until recently it has been working normally but now it will only load 16K programs. Also when you type '*Print In 31*' it prints 255 when it should print 0. The company which upgraded my machine was Computer Add-ons and I would be grateful if you could trace their new address as they seem to have disappeared.

A No luck with the address I am afraid. In any case this is no help in getting your Spectrum fixed.

There are a number of firms who repair Spectrums very cheaply. TV Services of Chesterton Mill, Frenches Road, Cambridge, are very reliable, and are not likely to "rip you off". I suggest you write to them and ask them for a quote. Another company you could try are Mancomp, of Printworks Lane, Levenshulme, Manchester.

It should not cost you more than £20.

Corrupted program

J Enderby of Farnborough, Hants, writes:

Q I wonder whether any of your technical staff or readers can help me? I have a 48K Spectrum which I have found to be a powerful and reliable machine, but which has one major failing in that it seems very prone to lose the memory due to static electricity.

The problem occurs if you touch the TV screen and so discharge the build-up of static, which in turn seems to send a charge down the aerial lead and causes the program to be corrupted. The interference cannot be coming down the power lead because it still occurs even when the Spectrum is running on battery power. As the machine is left running all day and is used by various people for a business application, I cannot simply ensure that nobody touches the screen or that the aerial is removed before the dust is removed from the TV screen.

Can you suggest anything that perhaps could be fitted into the aerial lead?

A The problem of static build-up around TV sets is not new to me, however the effect you describe is quite unusual. It would seem to me that the environment in which the TV/Spectrum are located must be conductive to the production of static.

There are a number of anti-static sprays that can be used, on the carpet normally, that help to reduce static levels quite considerably. The possibility of using some sort of static filter in the aerial lead is not one that I would follow up. Filtering signals, of any sort, is unlikely to be of benefit to you.

You could however try connecting the Spectrum to the TV via an aerial split box. These devices are normally used when you have two aerials that you wish to connect to the same TV and you wish to switch between them without having to disconnect and reconnect your TV aerials. They can be purchased (for around £2.00) from any TV shop.

Reversed quotes

C Barnes of Nottingham, writes:

Q I have a CBM 64 and at the moment I can't get reversed characters in between speech marks in the program that I'm writing. When I press *Ctrl* and *9*, I get an *R* symbol. Will this allow me to print in reverse? Without the speech marks I can print in reverse. Is this a bug in my machine?

A No it is not a bug. To get characters within quotation marks to be printed in reverse, you need to press *Ctrl* and *Rvs*. This will cause a reversed *R* to appear inside the quotes. This will make all following characters print in reverse (negative) mode. To turn this reverse feature off you need to press *Ctrl* and *Rvs/Off*.

Lynx expanded

Mrs M W Grierson of Newcastle-on-Tyne, writes:

Q At Christmas we purchased a Lynx 48K computer believing it to be a good expandible system, produced by a growing firm. We are now surprised to hear of Camputers going into liquidation.

Under these circumstances, do you know if there are still stocks of Lynx peripherals and software available, and where to purchase them? Also, if stocks of hardware are limited, what would you advise should be our priority to purchase in order to expand the system? Do you know if the firm will be bought out?

A The Camputers failure is yet another sad chapter in the history of British micro computing. Added to the recent failures of Dragon, Imagine, etc, it paints a depressing picture for the would-be consumer.

If a buyer for Lynx does not emerge and this seems unlikely months on, then I could not in all honesty advise you to expand the system at all. In my view you would merely be throwing more money away in the long run.

One key press

David Fox of Sheffield, writes:

Q I am writing a game on the Spectrum that has to have more than one key pressed at the same time. Could you please tell me how to do this, as on the Spectrum you can only press one key at a time to make anything move.

A The Spectrum only allows one key to be detected via the *Inkeys* function that is true. However, the *In* statement allows for the detection of simultaneous key depressions. Pages 159-160 of the Spectrum manual tell you which value of *In* you need to address particular keys, and also how to detect multiple key depressions. If you are after high speed keyboard reading then I recommend the 'Geoscan' routine in David Webb's book *Supercharge your Spectrum*.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Phil Rogers and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke*, *PCW*, 12-13 Little Newport Street, London WC2R 3LD

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KIM1 (6502) board + manuals £25. Wanted — Omikron Mapper for TRS80M1 and any books/info for same (TRS80 1) 0326 290304 (Cornwall).

WANTED Urgently! Spectrum power pack will pay up to £3. Tel (0582) 262984 after 4pm.

48K SPECTRUM Interface 1 Microdrive DKTronics keyboard DKTronics dual-port Interface Quickshot joystick Currah U Speech Lots Software utilities Books Mags Swap CBM64 + Extras or BBCB or Offers. Tel 0604 718730 am only.

WILL SWAP Orbiter, Ground Attack, Awari, Jackpot, Night Flight, Crash, Pontoon; will swap each game for one blank ZX microtape or old games. Telephone Grangemouth 486120 after 5pm.

THANK YOU to the anonymous person that sent me the printer manual for Sinclair printer from Daniel Morrissey. It shows the adverts really do work! Thank you.

SWAP LIGHTPEN for motherboard VIC 20 + Sargon II Chess for Cosmic Freighter or Jelly Monsters. Tel Reading 302131.

SWAP A QUICKSHOT II for Kempston in good condition. Phone Hemerden 69424. Ask for Phil.

BBC MICRO Wex colour 14" monitor 3 months old. To swap for CBM colour monitor. Tel 0760 337481.

ADVANCE 860 plus data recorder only three months old. Fully IBM compatible if upgraded. Worth £420, swap for Amstrad with colour monitor or sell for cash. All offers considered. Tel ZIA Nuneaton (0203) 329 743.

DRAGON ORIGINAL software for back issues of American Co-co mags. Rainbow, Hot Co-co etc or buy. Also want Disk utilities and programs. Contact Will on Tel (0772) 617555.

WANTED URGENTLY your Currah Micro Speech. I will pay a high price in original software over nine top hits. Please please please please phone me on 868 7000 now please!

WANTED ZX80 any memory size. Also Sinclair Cambridge prog. calculator. Will pay up to £7 + p&p each. Phone 01 554 0380 or write to 286 Portland Road, London SE25 4BL. Working order only. Kevin.

SWAP 21K VIC20 plus CN2 cassette recorder £100 worth s/w. All cost over £250 for BBC B or sell for best offer. Tel Wakefield 363777.

WANTED CBM-64 data cassette recorder. Will pay up to £25.00 also wish to know anybody in Ellesmere Port with Commodore to exchange notes on games and programs. 051 338 6825.

WANTED 48K SPECTRUM + keyboard + recorder, Alphacom or other interface, dot matrix — all or any combination considered — phone 08293 3388 (will collect) (Cheshire).

SWAP VIC 20 speech synth for 16K RAM switchable or not. Also Omega Race cartridge £5.00 or swap. Telephone Walsham Le Willows 314 after 3pm before 6.30pm. Ask Paul.

WANTED SINCLAIR Spectrum 48K with leads etc. Will pay up to £50 based upon condition. Tel Preston (0772) 745356 742177 after 4.15pm on weekdays.

SWAP 48K SPECTRUM + Kempston joystick + games for Acorn Electron. 01 850 7128 Dennis.

SORD M5 COMPUTER, data recorder, Basic G cartridge swap for Commodore 64 accessories or offers considered. Bangor 353346.

C B 40 CHANNEL Wagner home base which simple can be converted to 10 meters and two upconverters for slow scan and fast T V. Would exchange for 48K Spectrum with leads. 021 770 0266.

PORTABLE COLOUR T V 15 inch screen plus 1520 printer plotter. Swap for 1701 Commodore colour monitor in excellent condition. D Flint, 10 New Market St, Buxton, Derbyshire SK17 6LP.

WANTED SPECTRUM 48K, CBM64, Electron or BBC. Will also buy original s/w and some s/w for sale. Ring Newbury (0635) 32668. Mr Christopher Wren.

COMMODORE 64 C2N wanted swap for a complete radio control flying system 3 models with engines Radio Control 3 Servos McGregor. Value £200 + Stanford-le-Hope 644491 R R King.

SWAP ATARI 800 + books + s/w + case + Basic For CBM64 And C2N or sell £200 excellent cond. Buyer must collect write with phone number Steven Sanger, 30 Station Ave, Wickford, Essex SS11 7SS.

WANTED COMPLETE set of BBC DFS chips. Must be in perfect condition. Tel York (0904) 32762 after 5pm.

WANTED FOR VIC20 — Super Expander and program to convert CW into plain language on screen. Tel Coventry 0203 410208 after 8pm.

WANTED SPECTRUM/CBM64 pen pal hints tips. Write to S Rose, 377 Winchester Rd, Bassett, S'ton SO1 7DJ Hants.

WANTED SPECTRUM 48K exchange for Miranda SLR Camera, Telephoto lens 200mm, converter × 2. Telephone 061 336 6683.

WANTED PORTABLE colour TV compatible with ZX Spectrum 12-14 inch approx. Offers under £50. Ring Paul after 6pm 01 722 7425.

WANTED URGENTLY Kempston joystick and interface, also first issue of "Crash", think of a price and ring 01 348 3824, ask for Graham.

48K SPECTRUM — will pay up to £75. Paul Foale, 47 Evesham Walk, Mostyn Rd, Myatts Field, SW9 6PE.

WANTED 48K SPECTRUM Alphacom or any printer keyboard interfaces recorder s/w etc. Any combination considered. Tel 0294 3388 (will collect). Rick Bennett.

SPECTRUM PROGRAMMABLE joystick + 10 s/w cassettes for printer with paper. Tel 01 387 1427.

WANTED CHEAP computer with RS232 interface or simple RS232 terminal. I will pay around £50 + postage. Phone 0803 42013 (ask for Richard). Needed urgently for testing of computer bulletin board.

SWAP CBM64 Pet + cash for Amstrad. Also Spectrum s/w for sale. May consider other computer. Tel Tom — 07842 46491.

WANTED EXTENDED BASIC for TI994A or other hardware. Details to Llangefni, N Wales. 724-638.

SPECTRUM 48K + hardware. Cost over £400. Willing to swap for BBC B. Tel Hornchurch 57487.

WANTED CBM64 DISK drive + printer 0852 88333.

WANTED MAZIACS Nightfite II Heathrow Ant Attack or Chuckie Egg for 3D Seiddab Attack Atic Atac or Jack And The Beanstalk. Phone High Wycombe 713659 (after 7pm).

WANTED HIGH RESOLUTION Microvitek colour monitor preferably for Sinclair QL. Tel Mendlesham 7130 evenings.

WANTED MIRACLE'S WS2000 multi-baud modem with/without autodial. Will pay £70-£80 depending on condition. Phone Rory on 01-444-9586 after 4pm.

WANTED ZX-80 + manuals + wiring + all leads. Must be in good cond. Will pay good price. Write to Michael Wosian, Beherlhauser Str 200, 4800 Bielefeld 1, West Germany.

SWAP ORIC 48K with over software, books, tape etc for any interesting computer peripherals, working or not, or cash. Phone Harrogate (0423) 65270 evenings.

WILL SWAP ATARI 400 + Basic + program recorder, Quickshot joystick and £180 of software inc Sub Commander for CBM 64 + C2N or sell for £190, phone Castletown (Caithness) 689.

VIC 20 STARTER pack swap for TI99/4A or Atari games console. Write 20 Lower Ellacombe Church Road, Torquay, Devon.

ELECTRON USERS. Penpal to swap hires progs and games. Interested write to Steven Heyes, 86 Brothers Street, Blackburn, Lancs BB2 4ER or phone (0254) 29215, age 13–.

WANTED BBC B. With out OSS and Disk Drive. Interested in wp software and firm ware. CASH PAID. Aylesbury 25504.

WANTED EDUCATIONAL s/w for Spectrum. Child of 5 years old. Tel 021 430 3856.

WANTED VIDEO CHESS for TI99/4A and I am gamble. Derby 0332 76 72 76.

WANTED CBM 64 BBC, Acorn Electron or Spectrum. Swap for Bellwood Guitar Electric + Amplifier + £15. Or might swap VIC 20 + £100 of accessories. Tel 061 643-5858.

WANTED BBC B for cash purchase 0723 360406.

SWAP YOUR VIC 20 + C2N for CBS 1 Cobra 21FM, 1 DNT MT40 FM. Also power mike Megawatt antennas + SWR meter. Tel Rob 505 5963 (Wood ford, Essex).

ADVENTURE
HELPLINE

Lords of Time on Commodore 64. How do you get the small scale? How do you get out of the pit? Iain Pocock, 15 Parham Close, Littlehampton, West Sussex.

Philosophers Quest on BBC. I can't get down the crushing passage. How do you get out of the endless slides? Scott Kelly, 12 Pollock Road, Bearsden, Glasgow.

Devil's Island on Spectrum. How do you get out of the courtyard? Mrs M Taylor, 804 Ben Jonson House, Barbican, London EC2.

Colditz on Spectrum. How do I get off the window ledge with the rope? I have broken the bars. Do I need any more objects to help me? Timothy Gibbons, 7 Buckstone Drive, Edinborough. Tel. 031 445 3693 after 7pm.

Temple of Vran on Spectrum. After travelling through time I become stuck. Do you cross the lava flow? If so how? Jonathan Monson, 31 Tyne Crescent, Bedford.

Perseus and Andromeda on BBC. I am unable to find the sword. I have located the sack, water, discus, sandals, (two pairs), shield and helmet so far. Mrs H J Noale, 'Wayside', 48 Bouncers Lane, Prestbury, Cheltenham, Glos.

The 'O' Level Caper on Vic20. I don't know what command to use to swap the papers at the end. David Beal, 188 Nithsdale Road, Pollokshields, Glasgow.

Smugglers Cove on Spectrum. How do I passed the mermaid, the padlocked door, the stone slab, the barrier, the pirate and the room with acid? Tony Grist, 77 Beech Road, Bedfont, Middx.

Colossal Adventure on Spectrum. How do I get past the dragon? How do I get through the skull in the passage? Graeme Rose, 8A Broomberry Drive, Gourock, Inverclyde.

Pharoh's tomb on Spectrum. How do I cross the river? How do I get out of the maze? Mike Richards, 9 Victoria Road, Roche, Cornwall.

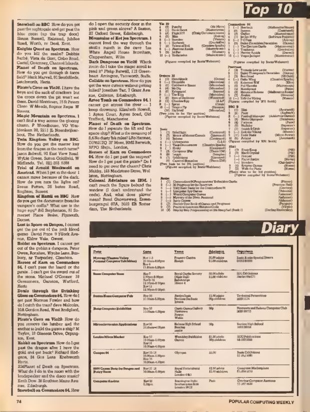
Quest Adventure on Spectrum. How do I enter castle oops after unlocking the door with the long key? Peter Elliot, Grafton Plough Lane, Kington Langley, Wilts.

The count on Vic20. The vbat laughs at me as I keep lighting cigarettes as the coffin disappears. Danny Jones, 4 Verney Street, Neasden, London, NW10.

Sphinx Adventure on BBC. I can't find the mouse. Ann Trotman, 130 South Street, Lancing, West Sussex.

Gems of Stradus on Amstrad. I can't find the food. How do you get

Feasibility Experiment on Spectrum. I can't open the studded door and I can't light the lamp. P Woodhouse, VD Weydgnlaan 22, 2211 JL Noordwijkerhout, The Netherlands.



Snowball on BBC How do you get past the nightingale and get past the blue room (up the trap door) Simon Russell, Halstead, Jubilee Road, Worth, nr Deal, Kent.

Knights Quest on Spectrum. How do you kill the snake? Debbie Bathé, Vista du Gust, Cobo Road, Castel, Guernsey, Channel Islands.

Planet of Death on Spectrum. How do you get through th force field? Mark Marvell, 91 Southfields, Letchworth, Herts.

Pirate's Cove on Vic20. I have the keys and the sack of crackers but the crocs down the pit won't eat them. David Merriman, 15 St Peters Close W Meads, Bognor Regis W Sussex.

Magic Mountain on Spectrum. I can't find a way across the gloomy chasm. P Woodhouse, VD Wetdenlaan 28, 2211 JL Noordwijkerhout, The Netherlands.

Twin Kingdom Valley on BBC. How do you get the master key from the dragon in the north turret? Jason Sidwell, 92 East View Road, Wylde Green, Sutton Coldfield, W Midlands. Tel. 021 355 5598

Trial of Arnold Blackwold on Amstrad. When I get in the door I cannot move because of the dark. How do you turn the lights on? Susan Patten, 35 bates Road, Brighton, Sussex

Kingdom of Hamil on BBC How do you get the documents from the vampire's coffin? What use is the huge egg? Bill Stephenson, 81 Somerset Place Stoke, Plymouth, Dorset.

Lost in Space on Dragon. I cannot get the pie out of the junk food game David Price 9 YUork Avenue, Ebbw Vale, Gwent.

Hobbit on Spectrum. I cannot get out of the goblin's dungeon. Peter Owen, Ronshee, Wyche Lane, Bunbury, nr Tarporley, Cheshire.

Heroes of Karn on Commodore 64. I can't pass the lizard or the pirate. I can't get the sword out of the stone. Michael O'Connor 19 Gossamers, Garston, Watford, Herts

Deals through the Drinking Glass on Commodore 64. How do I get past Norman Fowler and how do I catch the train? dave Malcolm, 10A Gordon Road, West Bridgford, Nottingham.

Pirate's Cove on Vic20. How do you remove the lumber and the anchor to build the pirate's ship? M Taylor, 18 Gleeson Drive, Orpington, Kent.

Hobbit on Spectrum. How do I get past the dragon after I have the gold and get back? Richard Hodgson, 34 Gun Lane Knebworth Herts.

224Planet of Death on Spectrum. What do I do in the room with the loudspeaker and the disco music? Keith Dow. 28 Southton Mains Avenue, Edinburgh.

Snowball on Commodore 64. How do I open the security door in the pink and green alcove? A Seaton, 27 Oxford Street, Edinburgh.

Mountains of Ket jon Spectrum. I cannot find the way through the skull's mouth in the cave Ian White Angell House Bromham, Chippenham, Wilts

Dark Dungeons on Vic20 Which room do I take the magic scroll to read it? Philip Butwell, 112 Greenheart Amington, Tamworth, Staffs.

Colditz on Spectrum. How do you get the wire cutters without getting killed? Jonathan Tart, 7 Grant Avenue, Colinton, Edinburgh.

Aztec Tomb on Commodore 64. I cannot get across the river — I keep drowning. Elisabeth Howell, 1 Ayton Court, Ayres Road, Old Trafford, Manchester.

Planet of Death on Spectrum. How do I operate the lift and the space ship? What is the meaning of 8,4 No dusty fish rules? LRo Hanmer, D186217Q 3F Mess, HMS Berwick, BFPO Ships, London,

Heroes of Karn on Commodore 64. How do I get past the serpent? How do I get past the pirate? Do I need to get over the chasm? Chris Maltby, 188 Maidstone Drive, Wollaton, Nottingham.

Colossal Adviature on IBM. I can't reach the figure behind the window (I don't understand the code). And, what does plover mean? Ruud Gloeneweg, Essenburgsingel 67A, 3022 EB Rotterdam, The Netherlands.

Vic 20

1	(3)	Punchy	(Mr Micro)
2	(1)	Duck Shoot	(Mastertronic)
3	(4)	Flight 015	(Craig Communications)
4	(5)	Blitz	(Anirog)
5	(—)	Snooker	(Visions)
6	(—)	Skyhawk	(Quicksilva)
7	(8)	Tower of Evil	(Creative Sparks)
8	(—)	[illegible]	(Mastertronic)
9	(9)	Jet Pac	(Ultimate)
10	(—)	Undermine	(Mastertronic)

(Figures compiled by Boots/Websters)

Dragon 32

1	(1)	Hunchback	(Ocean)
2	(—)	Shuttle	(Microdeal)
3	(6)	Cuthbert in Space	(Microdeal)
4	(4)	Mr Dig	(Microdeal)
5	(6)	Kriegspiel	(Beyond)
6	(—)	The King	(Microdeal)
7	(8)	Ring of Darkness	(Wintersoft)
8	(2)	Chuckie Egg	(A & F)
9	(—)	Sprint	(Cable)
10	(—)	Dragon Fly	(Hewson)
	(10)	[illegible]	(Microdeal)

(Two joint tie for 10th position)
(Figures compiled by Boots/Websters)

Atari

1	(1)	Solo Flight	(Centresoft)
2	(3)	[illegible]	(Llamasoft)
3	(4)	[illegible]	(Centresoft)
4	(—)	Cybernoid	(L & S)
5	(—)	Tank Commander	(Creative Sparks)
6	(—)	[illegible]	(Centresoft)
7	(3)	Computer War	(Thorn EMI)
8	(9)	[illegible]	(Imagine)
9	(7)	Gridrunner	(Llamasoft)
	(6)	[illegible]	(Thorn EMI)

(Two [illegible] tie for 9th position)
(Figures compiled by Boots/Websters)

Books

1	(1)	Commodore 64 Programmers' Reference Guide	(Pitman)
2	(—)	30 Programs for the Spectrum	(Prentice-Hall)
3	(—)	Very Basic Basic for the Commodore 64	(Century)
4	(—)	Computer Spy Games	(Usborne)
5	(—)	Weird Computer Games	(Usborne)
6	(—)	Mystery of the Silver Mountain	(Usborne)
7	(—)	Basic Games	(Usborne)
8	(7)	Sinclair User Book of Games and Programs	(Penguin)
9	(7)	Practical Spectrum Machine Code	(Virgin)
10	(9)	Step by Step Programming on the Spectrum (Book 1)	(Dorling Kindersley)

Commodore 64

1	(—)	Sherlock	(Melbourne House)
2	(6)	Zaxxon	(Centresoft)
3	(9)	[illegible]	(Mastertronic)
4	(3)	Jet Set Willy	(Software Projects)
5	(—)	P C Fuzz	(Anirog)
6	(8)	Daley Thompson's Decathlon	(Ocean)
7	(—)	[illegible]	(Mastertronic)
8	(—)	Trashman	(Quicksilva)
9	(—)	Harrier Attack	(Durell)
10	(—)	Vegas Jackpot	(Mastertronic)

(Figures compiled by Boots/Websters)

Spectrum

1	(2)	Tornado Low Level	(Vortex)
2	(1)	Daley Thompson's Decathlon	(Ocean)
3	(3)	Beachhead	(US Gold)
4	(—)	Delta Wing	(Creative Sparks)
5	(6)	Kokotoni Wilf	(Elite)
6	(6)	Full Throttle	(Micromega)
7	(4)	Matchpoint	(Psion)
8	(8)	[illegible]	(Melbourne House)
9	(7)	Avalon	(Hewson)
10	(—)	Erik the Viking	(Mosaic)

(Figures compiled by WH Smith)

BBC B

1	(1)	Elite	(Acornsoft)
2	(2)	Frak!	(Aardvark)
3	(—)	Football Manager	(Addictive Games)
4	(5)	Micro Olympics	(Database)
5	(4)	Fortress	(Pace)
6	(6)	Wallaby	(Superior)
7	(7)	Smash & Grab	(Superior)
8	(—)	Erik the Viking	(Mosaic)
9	(10)	[illegible]	(Micro Power)
10	(6)	Aviator	(Acornsoft)

(Figures compiled by WH Smith)

ZX81

1	(1)	Krazy Kong	(PSS)
2	(3)	Black Crystal	(PSS)
3	(—)	Hopper	(PSS)
	(—)	Planet Raider	(Novus)
	(—)	Invaders	(Quicksilva)
6	(4)	Krypton Caverns	(Novus)
7	(2)	Walk the Plank	(Novus)

(There tie for 3rd position)
(Figures compiled by Boots/Websters)

Diary

Date	Time	Venue	Admission	Organisers
Mycomp (Thames Valley Personal Computer Exhibition)	Nov 1-3 10.00am-8.00pm Nov 4 11.00am-5.00pm	Progress Centre Slough	£2.00 adults £1.00 children	Basic Radar Special Events [illegible]
Irish Computer Show	Nov 7 2.00pm-8.00pm Nov 8-10 12.30pm-9.30pm Nov 11 12.30pm-6.00pm	Royal Dublin Society (Main Hall) Ballsbridge Dublin 4	£2.00 adults £1.00 children	SDL Exhibitions Dublin 684171
[illegible] Home Computer Fair	Nov 10 10.00am-5.00pm	[illegible] Pavilion [illegible]	£1.00 adults 50p children	Technical Promotions [illegible]
Powys Computer Exhibition	Nov 10 12.00am-4.30pm	Oasis Games Gallery Newtown Powys Wales	50p	Newtown and [illegible] Computer Club [illegible]
Microelectronics Applications	Nov 16 10.00am-4.00pm	[illegible] High School [illegible] Leeds	50p	[illegible] High School [illegible]
London Micro Market	Nov 15 10.00am-6.00pm Nov 11 10.00am-4.00pm	Wembley Exhibition Centre	£1.00 adults 50p children	ECC Publications 01-[illegible]
Compec 84	Nov 13-15 10.00am-6.00pm Nov 16 10.00am-4.30pm	Olympia	£3.00	Reed Exhibitions 01-[illegible]
2001 Games Fair for Dragon and Tandy Users	Nov 17-18 10.00am-6.00pm	Royal Horticultural Halls London SW1	£2.00 adults £1.00 children	Computer Marketplace 01-[illegible]
Computer Auction	Nov 26 6.00pm	[illegible] Halls Southampton Row London WC2	Free	[illegible] Computer Auctions 01-[illegible]

New Releases

SPACEHOPPERS

A little while back Sinclair issued a number of games prepared for the Spectrum by a Japanese company called Hudsonsoft — just about the only company from Japan to do anything for the machine

Now some of Hudsonsoft's MSX games have been issued here by Kuma. One of my favourites is *Eric and the Floaters* — an arcade game with a touch of originality about it.

The screen displays a maze in which lurk what look like spacehoppers — these bounce about harmlessly until they turn red when they chase you mercilessly. You can defend yourself by laying bombs which explode after a few moments. The problem with this is that you are very likely to blow yourself to bits rather than the spacehoppers

There isn't much else to the game besides blowing things up and running away, but for pure wacky destructiveness it's definitely good fun. Not only that, but by MSX standards it's cheap too.

Program *Eric and the Floaters*
Price *£8 95*
Micro *MSX*
Supplier *Kuma Computers*
Unit 12
Horseshoe Park
Horseshoe Road
Pangbourne
Berkshire RG8 7JW

ANALYSIS

Moneywise is a home money management system for the BBC computer which should give you just about every facility you could possibly require — not only that but it's (by BBC software standards) cheap too

There are two sections to the program which allow for forcasting, analysis summary and can display your finances in three dimensional bar charts.

Assuming your home is constantly plagued by industrial spies peeking into your finances you'll also be grateful for a password option which restricts access to your files. All the information can be saved to disc as can the program — a definite bonus which is still not a feature widely adopted by companies. You can even print out the bar charts — a neat program

Program *Moneywise*
Price *£9 95*
Micro *BBC/Electron*
Supplier *Squirrel Software*
4 Bindlow Avenue
Eccles
Manchester M30 0DV

TOY REVOLT

Toy Bizarre is the latest Commodore game from Activision it's another one of those multi things derived somewhere along the line from *Manic Miner*

You are Merlon the Maintenance Man looking after the Gizmo Toy works (brilliantly inventive names, eh?) — the toys are in revolt. Well, they bounce and leap about and the balloons fill themselves up from various valves across the screen (you have to pop them)

Arch enemy is Hefty Hilda (alliteration!) who naughty woman that she is, keeps turning the valves back on and letting the balloons fill up again. So it's basically one of those faster and faster until your fingers hurt type games which some people love and others hate Original it isn't, and Hefty Hilda is quite possibly the worse in a long line of naff names that have been given to baddies in computer games over the years.

Program *Toy Bizarre*
Price *£9.95*
Micro *Commodore 64*
Supplier *Activision*
15 Harley House
Marlebone Road
Regents Park
London NW1

RENEGADE

Phoenix Software is best known for its arcade adventure packages where an arcade style game and an adventure were interlinked Breaking away from this, Phoenix has released *In 1985*, a slightly bizarre arcade game which has something to do with Lech Walesa and Winston Smith. It w mainly quite a clever multi-screen game which costs a mere £4 99

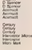
You are Lech, Polish trade union leader and must battle your way through 20 screens — like *Manic Miner* there is only one or at best, two ways through successfully, so precisely have the obstacles been designed. The obstacles are the trappings of totalitarian rule — secret policemen, cameras etc.

Lech s objective is to pick up various parts of a disguise which will enable him to pretend to be the dictator, instead of his radical renegade self. Political activists everywhere should rush out and buy it.

Continued over the page

This Week

Program	*Type*	*Micro*	*Price*	*Supplier*
Fruit Machine	Arc	Aquarius	£1.29	D Spencer
Pontoon	S	Aquarius	£1 49	D Spencer
Gateway to Karos	Ad	BBC	£9 95	Acornsoft
Boxer	Arc	BBC	£9 95	Acornsoft
Dregna	Arc	BBC	£9.95	Acornsoft
PCW Games				
Games Collection	Arc	BBC	£4.99	Century
Starfinder	Arc	BBC	£12 95	Century
The Horse Lord	Arc	BBC	£12.95	Century
Big Ben	Arc	Commodore 64	£7 00	Interceptor Micros
Guzzler	Arc	Commodore 64	£7 00	Interceptor
Hyper Blast	Arc	Commodore 64	£1 99	Micro Mart
Quango	Arc	Commodore 64	£7 00	Interceptor Micros
Skyline Attack	Arc	Commodore 64	£7.95	Century
Super Scoop	Arc	Commodore 64	£1.99	Micro Mart
The French Mistress	Ed	Commodore 64	£8.95	Kosmos
The German Master	Ed	Commodore 64	£8.95	Kosmos
The Spanish Tutor	Ed	Commodore 64	£8 95	Kosmos
Time Trucker	Ed	Commodore 64	£7 95	ASK
Brandon s Basic	Ut	Commodore 64	£39 95	CSM
Supagrite 64	Ut	Commodore 64	£6 95	Tynesoft
Micro Sign	Ut	Dragon	£17 25	Micro Sign
The Diabolical Tower	Ad	Oric	£6.50	No Man s Land
Tyrann	Ad	Oric	£9.95	No Man s Land
Categ-oris	Ad	Oric	£7.95	No Man s Land



New Releases

Program	*In 1985*
Price	*£4.95*
Micro	*Commodore 64*
Supplier	*Phoenix Software, Spangles House, 116 Marsh Road, Pinner, Middlesex*

PANIC

Salamandar Software produced the *737 Flight Simulator* for the Dragon among other machines, and it became one of its most successful titles — now an MSX version has been issued by Mirrorsoft enhanced and adapted to support the extra facilities

The program displays controls and h res graphics of the outside world. You can choose to fly by day or by night, set up your own runway layouts, simulate engine failure, etc, etc. In short you can produce genuine panic and anxiety as you plummet towards the earth for the 19th time

There are a vast number of controls but it can be alleviated somewhat by the use of a joystick — all this with a manual too for a mere £9.95

Program	*737 Flight Simulator*
Price	*£9.95*
Micro	*MSX*
Supplier	*Mirrorsoft, Headington Hill Hall, Oxford OX3 0BW*

SYMPATHY

Shuttle Shock, it has to be said, has a certain charm about it.

For instance, a particularly nice touch is that the title has absolutely nothing to do with the game itself. Also it is quaintly old-fashioned, in that it looks like something about a year and a half old.

But most of all, it evokes a strange kind of melancholic sympathy...not only for those that have already spent £2.95 buying it. Not only for the few number of people that might enjoy playing it. But maybe most of all because it is the perfect example of a good idea badly implemented.

For those interested, you teleport (this is the good idea) from platform to platform on each screen, avoiding the oscillating nasties.

A sort of, low grade *Miner* with extra bounce

Program	*Shuttle Shock*
Price	*£2.95*
Micro	*Spectrum 48K*
Supplier	*Software Supersavers, Brand Bear Complex, Allerton Rd, Woolton, Liverpool*

Pick of the week

FAMILY GAME

Pettigrew's Diary and *Operation Safra* were two of the most popular of all Dragon programs with their unusual mix of graphics and adventure. Now the games have been adapted for other machines

Although competition is obviously a lot tougher in the Spectrum market, Pettigrew still stands up as an entertaining release even if technically unsophisticated. For one thing it's on an epic scale being divided into four sections over two cassettes.

Operation Safras is divided into two parts: *The Searching* and *The Returning*. In the first you must find a mysterious sword and rescue five agents — there is a time limit and you may not enter part two before completing this section.

In the next section the sword must be returned to the Safras caves. Basically, there are eight small adventures each leading to the next. Both of these first parts are text adventures.

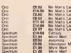
In *Pettigrew's Diary* you must search around a blazing farmhouse and discover clues and listen to the dying words of the man inside — it has simple map style graphics. The rest of the adventure is text as you search London and beyond. Of part four I cannot speak since I've never seen it.

Shards are stressing that what they are trying to provide is 'good honest family entertainment rather than mega games. This could be a cover up for a lack of sophistication, but I think it's largely justified. This could be a nice package to play together after Christmas lunch since it doesn't require the horribly devious thinking of some of the brain curdling text adventures nor the dexterity of some of the multi-screen arcade epics. It's fun, though, if your family is still talking to one another after Xmas lunch.

Program	*The Pettigrew Chronicles*
Price	*£9.95*
Micro	*Spectrum*
Supplier	*Shards Software, Suite G, Roycraft House, Linton Road, Barking, Essex*

This Week

Fire Flash	Ad	Oric	£8.50	No Mans Land
Panic	Ad	Oric	£14.95	No Mans Land
Styx	Ad	Oric	£8.50	No Mans Land
Hare and Tortoise	Ed	Oric	£8.50	No Mans Land
Dbug	Ut	Oric	£11.95	No Mans Land
MultiFiler	Ut	Oric	£14.99	No Mans Land
Optimum	Ut	Oric	£9.95	No Mans Land
Legend	Ad	Spectrum	£14.95	Century
Golden Pawn	Arc	Spectrum	£1.99	Micro Mart
New Wheels John?	Arc	Spectrum	£6.00	Automata
Plummet	Arc	Spectrum	£5.95	Interceptor Micros
Rally Driver	Arc	Spectrum	£1.99	Micro Mart
Maths Pack	Ed	Spectrum	£1.90	Micro Mart
World Flags	Ed	Spectrum	£1.90	Micro Mart
Bingo	S	Spectrum	£5.95	Tynesoft
Gambler	S	Spectrum	£1.99	Micro Mart
Gener 90	Ut	Spectrum	£7.95	Seven Stars
Pontoon	S	Texas TI99	£1.30	D Spencer
Caveman Panic	Arc	ZX81	£0.99	D Spencer
Deathstar	Arc	ZX81	£0.99	D Spencer



Key **Ad** — adventure/**Arc** — arcade/**Ed** — education/ **S** — strategy-simulation/**Ut** — utility

RIDDLE

Legend from Century Communications is said to be a follow up to epics like *Valhalla* and *The Hobbit*

Certainly it comes in an *enormous* box and costs £14.95.

The package includes a one of those vast books chock-full of names like Druss (as in a load of) and Delnock Pass, a mighty fortress and innumerable concubines — sounds a bit like the Playboy organisation to me.

Anyway, there is the computer program based around, but not specifically on, the book The first section is a vast (using every form of text compression under the sea) role-playing adventure in which you as Rek (as in, of the Hesperus) try to recruit leaders and regiments to defend Dros (as in, a load of, again) Delnoch (wasn't he in the Millwall side that beat Benfica in '66?).

The part of the adventure involves wandering around, searching for objects and solving various riddles — eg What can you give someone that they can't steal—by choosing the right options from a changing series of multiple-choice questions (quite a few old logic chestnuts thrown in here as in, one person lies always, another tells the truth always, how do you tell which is which, etc).

It is mainly text but with occasional graphics and your score in this game affects your success in game two, The Siege of Dros Delnoch, which is essentially a complex strategy game with good, sometimes excellent graphics

Legend is an unusual package, best seen rather as a complex but approachable wargame rather than a *Hobbit* follow up

Pity about the silly names though.

Program	*Legend*
Price	*£14.95*
Micro	*Spectrum*
Supplier	*Century Communications Portland House 12-13 Greek Street London W1V 5LE*

CLEANING UP

After the unique and successful *Trashman*, New Generation has now released a sequel. *Travels with Trashman* In this program Trashman has gone into private operation and is cleaning up (literally and metaphorically) all over the world.

The game mixes strategy and arcade action as Trashman earns money by clearing rubbish from various scenic but dangerous locations In Spain, Trashman enters the bull ring which is covered with roses from an adoring crowd celebrating the bullfight; you have to clear it without being biffed by a bull.

Other problems include New Orleans street bands, ferocious frogs, tears at the wailing wall and coconuts. Trashman passes from one section to the next by accumulating enough cash from his work It's an amiable sort of game, light hearted and that may put some alien bashers off but I liked it.

Program	*Travels With Trashman*
Price	*£5.95*
Micro	*Spectrum*
Supplier	*New Generation The Brooklands 15 Sunnybank Lyncombe Vale Bath BA2 4ND*

ANXIETY

The Love Oracle will change your life, it says on the box.

The Love Oracle is a combined book and program that uses the I Ching to sort out your emotional relationships. The main thing really is the book that reduces all anxieties about relationships to eight basic questions 'are we compatible?' 'do they love me?' etc — the computer program then works out the 'hexagram' — one of 64 six-line oracles.

Now being a bit of an I Ching buff myself, it worries me that you can consult it just by pressing keys on the computer — surely the whole business of shaking the coins or manipulating the yarrow stalks is supposed to be part of the mind calming exercise

You'll either think the I Ching is a load of old baloney or you won't. If you don't you might find this package quite an interesting Christmas present.

Program	*The Love Oracle*
Price	*£14.95*
Micro	*Spectrum*
Supplier	*Solar Publishing Kemp House 155 160 City Road London EC1V 2MX*

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market. If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases *Popular Computing Weekly* 12-13 Little Newport Street London WC2R 3LD

This Week

Addresses
ASK, London House, 68 Upper Richmond Rd, London **Acornsoft,** Betjeman House, 104 Hills Rd, Cambridge **Automata UK,** 27 Highland Road, Portsmouth, Hants **CSM** Suite 36, Strand House, Great West Rd, Brentford, Middx **Century Publishing**, Portland House, 12-13 Greek St, London **Interceptor Micro's,** Lindon House, The Green, Tadley, Hants **Kosmos,** 1 Pilgrims Close, Harlington, Dunstable, Beds **Micro Sign and Data Systems,** PO Box 60, Woking, Surrey **No Man's Land,** High Tech Units 1+2, Conlon, Waterlane, Darwen **Seven Stars,** 15 Gloucester Avenue, London **D Spencer,** 50 Cranswick Close, Billingham, Cleveland **Tynesoft,** Addison Industrial Estate, Blaydon-upon-Tyne, Tyne and Wear

This Week is a new section that covers all the new software coming on to the home micro market each week All suppliers should send details of their new programs to This Week *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD

Micro treatment

Dan Dare is set to join the computer age. At last. After years spent fighting the green skinned bulbous headed, Medon and similar alien insurgents, Dan Dare is to star in a computer game.

Virgin Games will release a program based on the very same hero of the recently resuscitated *Eagle* comic in the first half of next year. Versions of the game should be available initially on the Commodore 64, Amstrad and MSX machines.

This use of a comic strip character in a computer game is not an isolated occurence. Ever since the phenomenally successful Hobbit program was launched on the Spectrum by Melbourne House in 1982, an increasing number of film, TV, book and cartoon characters have been appearing in computer games.

Dr Who, The Hulk, Sherlock Holmes and even the Mr Men have all been converted into computer games of one form or another. Popular TV series such as *Dallas*, *The Fall Guy* and *Automan* are due to undergo the micro treatment. Even the classics have not been ignored, with a version of *Macbeth* appearing under the Creative Sparks label for the Commodore 64.

Most recently, Hutchinson announced at the Frankfurt Book Fair that it will be releasing a computer game based on Frederick Forsyth's new novel *The Fourth Protocol*, which has just been serialised in the *Mail on Sunday*.

However, with a few honourable exceptions, most of these computer games have been at best mediocre. The first Dr Who game released by the BBC for example, was an uninspired arcade game which even its author regarded as boring.

The Hulk, which was produced by Scott Adams's Adventure International, had superb graphics but is marred by poor on-screen presentation.

The possibilities for producing computer games based on best-selling books and films are almost limitless. Imagine the appeal of a really top-flight arcade game based around characters from *Indiana Jones and the Temple of Doom* or even something like *Company of Wolves*. Discover what it feels like to become Luke Skywalker and take on the might of the Empire's fleet.

Agatha Christie fans might like to try their hands at solving some of her cases particularly if the solutions change each time you play. You may get bored re-reading a novel, because you already know the ending, but in a computer game you can have as many different endings — as the programmer allows — depending even on your own play.

But programs such as these will require an enormous investment in both time and money if they are to be done well. Individual freelance programmers are unlikely to have either the capital or the necessary all-round skills needed to create such sophisticated games.

Film and book publishers who want to make an impact on the software market should ally themselves with small teams of programmers who are used to working to budgets and deadlines.

In addition, these publishers should consider developing computer games while a new book or film is being made, rather than waiting for their completion before starting work on the game - Activision may come close with it's *Ghostbusters* game. There are obvious advantages in being able to advertise the film, the book of the film and the computer game at the same time.

Interestingly Lucasfilms, the company which produced *Raiders of the Lost Ark* and the *Star Wars* trilogy, formed a partnership with Atari earlier this year. However with Warners selling Atari to ex-Commodore boss Jack Tramiel for $240m in July, the fruits of that partnership have yet to be realised.

The computer movie is a phrase that is being overused in the micro press at the moment but it may not be as far fetched as it sounds. Films such as *War Games*, where a teenage American high-school student almost starts World War III by accident, already have home computer games based on them. *Tron* inspired a host of computer games featuring deadly light cycles and electronic frisbees.

It will be interesting to see if any computer games are spawned in the wake of *Electric Dreams*, an upcoming film about a boy, a girl, and a computer called Edgar. By coincidence the music for the film has been provided by Virgin.

'Dan Dare? Great game...have you seen the film?'

Brendan Gore

A block problem

Puzzle No 131

That eccentric mathematician, Professor Otto Hex, had just presented his young grandson with a set of wooden blocks. Typically, for the Professor, there was some numerical logic behind the gift.

"You see," he explained, "the number of blocks is what we call 'triangular' — that is they can be laid out in the form of a triangle — and yet they can also be laid out in th form of two squares."

By way of illustration he went on to explain that had there been ten blocks they could form a triangular pattern with 1, 2, 3 and 4 blocks to a row, and also a 3 × 3 and a 1 × 1 square arrangement. Similarly, had there been 45 blocks, there would have been enough for a triangle with nine tiers, or two squares — in this case a 6 × 6 and a 3 × 3 arrangement.

"In fact," added Professor Hex, "when he comes to arrange the two squares he will have a choice of no less than three different ways in which it can be done."

What is the smallest number of blocks that the Professor could have sent?

Solution to Puzzle 126

The number was 111999888. By adding one to this, 111999889 is equal to the square of 10583.

The program evaluates each set of numbers in sequence to try to find a result that is just one short of a perfect square.

```
10 FOR A = 1 TO 9 20 FOR B = 0 TO 9 30 IF A = B THEN
GOTO 130 40 FOR C = 0 TO 9 50 IF C = B OR C = A THEN
GOTO 110 60 LET N = A * 111000000 + B * 111000 + C *
111 70 LET N = N + 1 80 LET S = SQR(N) 90 LET S =
VAL(STR$(S)) 100 IF S = INT(S) THEN PRINT A,B,C,S
110 NEXT C 120 NEXT B 130 NEXT A
```

Winner of Puzzle No 126

The winner is S McCarthy, Shelton Avenue, Newark, Notts, who receives £10.

Rules

If the puzzle can be sensibly solved using a computer, then the winner will have included a listing of the program used to find the correct answer. The closing date for entries to Puzzle 131 is November 16.

The Hackers

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